DOCUMENT RESUME

ED 027 702 EF 002 350

Educational Facility Abstract Journal 1968.

Association of School Business Officials, Chicago, Ill. Research Corp.; Council of Educational Facility Planners, Columbus, Ohio.

Pub Date 68

Note-145p.

EDRS Price MF-$0.75 HC-$7.35

Descriptors-*Annotated Bibliographies, *Educational Finance, Facility Guidelines, *Facility Requirements, Financial Support, Legal Problems, Operations Research, *School Architecture, *School Buildings, School Design, School Maintenance

This compendium of the Educational Facilities Abstract Journal provides in organized form the content of eight separate publications of the Council of Educational Facility Planners Abstract Service. It is composed of resumes of school plant research and planning information of national relevance. Document resumes are organized in the following categories--(1) determining school plant requirements, (2) architectural services, (3) legal aspects, (4) finance, (5) the building--general and technical aspects, (6) the building--instructional rooms and special purpose rooms, and (7) operation and maintenance of plant. A cross-reference index is included. (FS)

ED027702

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

EDUCATIONAL FACILITY ABSTRACT JOURNAL 1968

PRODUCED BY THE CEFP RESEARCH COMMITTEE

WALLACE H. STREVELL, CHAIRMAN
GEORGE S. WRIGHT
WILLIAM W. CHASE
ALAN C. GREEN
LEONARD HERMAN

PAULINE OLIVER, M.ED., EDITOR
CEFP ABSTRACT SERVICE
UNIVERSITY OF HOUSTON
HOUSTON, TEXAS 77004

CEFP ABSTRACTORS

AMUNDRUD, C.
BLACKBURN, C. S.
BRISCOE, WILLIAM S.
BUMBARGER, CHESTER
BUSH, DONALD O.
CAUDILL, WILLIAM W.
CLAPP, WILFRED F.
COFFEY, M. GENE
CONRAD, M. J.
FEATHERSTONE, RICHARD L.
FLESHER, W. R.
GREEN, ALAN C.
GRIMES, A. B.
GWYNN, THOMAS S., JR.
HAWLEY, CLIFFORD
HOLSTEAD, RICHARD L.
HULVEY, J. H.
HUTCHESON, DAVID W.
IRWIN, FRANK E.
JORDAN, THOMAS EARL
LANGSTON, LAMOINE
LEU, DONALD J.
MACCONNELL, JAMES D.
McGUFFEY, C. W.
MILLER, SELWYN A.
MOLL, EMMETT J.
RASMUSSEN, GERALD R.
ROBBINS, JERRY H.
SHAW, ARCHIBALD B.
SIMPSON, ROBERT J.
STONEMAN, MERLE A.
TJOMSLAND, ARNOLD C.
TONIGAN, RICHARD F.
WALLING, W. DONALD
WESTBY, CLEVE O.

© 1968 Council of Educational Facility Planners

COUNCIL OF EDUCATIONAL FACILITY PLANNERS, INC.
29 WEST WOODRUFF AVENUE COLUMBUS, OHIO 43210

EF002350

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED
BY Dwayne E. Gardner
CEFP
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

PUBLISHED BY

COUNCIL OF EDUCATIONAL FACILITY PLANNERS

FORMERLY, NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION

OFFICERS

RICHARD F. TONIGAN, PRESIDENT: DIRECTOR OF SCHOOL PLANNING SERVICE, COLLEGE OF EDUCATION, UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106

JAMES M. THRASHER, PRESIDENT-ELECT: ROCKY MOUNTAIN EDUCATIONAL LABORATORY, INC., GREELEY, COLORADO 80631

JOHN L. CAMERON, PAST-PRESIDENT: DIRECTOR, DIVISION OF FACILITIES DEVELOPMENT, OFFICE OF CONSTRUCTION, U.S. OFFICE OF EDUCATION, WASHINGTON, D.C. 20202

BOARD OF DIRECTORS

MARION J. CONRAD: HEAD, EDUCATIONAL ADMINISTRATION AND FACILITIES UNIT, COLLEGE OF EDUCATION, OHIO STATE UNIVERSITY, COLUMBUS, OHIO 43210

M. TED DIXON: SUPERINTENDENT OF SCHOOLS, CAJON VALLEY UNION SCHOOL DISTRICT, EL CAJON, CALIFORNIA 92002

ROBERT L. GUILD: EDUCATIONAL CONSULTANT, PROTESTANT SCHOOL BOARD OF GREATER MONTREAL, MONTREAL 29, QUEBEC, CANADA

C. W. McGUFFEY: EXECUTIVE DIRECTOR, ASSOCIATED CONSULTANTS IN EDUCATION, INC., TALLAHASSEE, FLORIDA 32301

GEORGE W. REIDA: DIRECTOR, SCHOOL FACILITIES SERVICES, KANSAS STATE EDUCATION BUILDING, TOPEKA, KANSAS 66612

CHARLES WELLS, JR.: SCHOOL PLANNING CONSULTANT, WAYNE COUNTY INTERMEDIATE SCHOOL DISTRICT, DETROIT, MICHIGAN 48226

EXECUTIVE SECRETARY

KENNETH R. WIDDALL: COUNCIL OF EDUCATIONAL FACILITY PLANNERS, COLUMBUS, OHIO 43210

AND
ASSOCIATION OF SCHOOL BUSINESS OFFICIALS

OFFICERS

THOMAS A. LINTON, B.S., R.S.B.A., PRESIDENT
CHARLES W. FOSTER, ED.D., R.S.B.A., SECRETARY-TREASURER & DIRECTOR OF RESEARCH

RESEARCH
CORPORATION

BOARD OF DIRECTORS

DALE DOUGLAS, R.S.B.A.
DAVID H. RHONE, B.A., R.S.B.A.
ERNEST W. RICHARDS, JR., B.A., R.S.B.A.
HENRY J. BENNINGEN, C.P.A., F.C.I.S.
DONALD I. PRYOR, M.A., R.S.B.A.
ROBERT W. WALKER, M.A., R.S.B.A.
ROBERT E. SCHOALES, M.R.A.I.C.
ERNEST C. GRAYSON, M.B.A., R.S.B.O.
RIDGLEY M. BOGG, ED.D.

OFFICE OF DIRECTOR OF RESEARCH
ASSOCIATION OF SCHOOL BUSINESS OFFICIALS
DR. CHARLES W. FOSTER, DIRECTOR
2424 W. LAWRENCE AVENUE
CHICAGO, ILLINOIS 60625

Preface

This compendium of the Educational Facilities Abstract Journal provides in organized form the content of eight separate publications of the CEFP Abstract Service. The journal is composed of resumes prepared by CEFP abstractors. The managing editor of the CEFP Abstract Service has been Mrs. Pauline Oliver, and the abstractors have been qualified members of the Council.

Orignially the CEFP Research Committee established a pilot project under U. S. Office of Education grant to locate, evaluate, and abstract school plant research and planning information of national relevance. In 1965 the committee supplied the Education Research Information Center (ERIC-USOE) with a thousand schoolhouse research and planning resumes and documents dated subsequent to 1960. From 1965 to 1967 the committee released quarterly journals to the Council membership containing abstracts of current materials supplied by the CEFP abstractors.

Under terms of the initial Abstract Service project the documents listed in the reports were to be unpublished or of relatively low circulation. Normally these documents reflected educational facility research or research applications. The committee continued its project until 1967, with the assistance of Council abstractors who updated the collection of abstracts.

The reader is assisted in locating information by a cross-reference index. The Research Committee does not carry a stock of the reviewed documents. THE READER SHOULD OBTAIN DESIRED ITEMS BY WRITING DIRECTLY TO THE PUBLISHER SHOWN. Many of the items are also supplied by ERIC-USOE in microfiche.

Wallace H. Strevell,
Chairman
CEFP Research Committee

Contents

Section Items

I. Determining School Plant Requirements 1-118

II. Architectural Services 119-125

III. Legal Aspects 126-134

IV. Finance 135-175

V. The Building - General and Technical Aspects 176-289

VI. The Building - Instructional Rooms and Special Purpose Rooms 290-376

VII. Operation and Maintenance of Plant 377-407

I. DETERMINING SCHOOL PLANT REQUIREMENTS

1 ADMINISTRATIVE STUDY: "WHAT ETV RESEARCH HAS TAUGHT"
Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. 1965.

Wittich makes the point that ETV is but an external signal the quality of which depends upon the caliber of programming and staff. His purpose is to examine research findings which change the nature and function of ETV. Findings: (1) It is not a question of whether or not some subjects are better for ETV than others but rather that of finding the best approach and resources with which to teach any subject. (2) ETV is no longer fairly criticized as one-way instruction. (3) Increasing attention is being placed on multimedia approaches (systems input) to learning input. (4) ETV can be profitably used as a tool of inservice teacher improvement. (5) Selecting "master teachers" for ETV has proven effective but is being replaced by a team approach. Lewis points out that several kinds of communication systems exist which must be coordinated for maximum effectiveness: bell and clock systems, internal phones, and public address facilities for a few. He notes that pulse corrections in electric clocks may interfere with ETV reception and that flourescent lighting may interfere with microphone pickups. Lewis states that new facilities in growing schools call for more than the conventional approach and suggests the following considerations: (1) Does the required degree of intercommunication system call for automatic or manual handling? (2) Should public address systems be master-monitored or master-controlled? (3) What environmental factors should be considered? (4) Since speaker systems fall short of adequate announcement facilities in large sound areas, the control point should be in the performing area itself and the radial horns should be directed toward the seating area. (5) Does student demand call for a language or a learning laboratory? Should it be connected to the intercommunication system? Lewis indicates that the important functions in such laboratories should be regarded as (1) passive listening, (2) audio-active, (3) review, (4) multiple tape duplicating, (5) testing, (6) intercommunication, and (7) power outlets. (A. C. T.)

2 Arkansas State Department of Education
A GUIDE FOR STUDY OF THE ELEMENTARY SCHOOL, SECTION
ON ELEMENTARY FACILITIES
State Department of Education
Little Rock, Arkansas. 1963, 15 pp.

Lists criteria for study and rating elementary school facilities. Areas under consideration include the school site, buildings and equipment, heating, ventilation, and lighting, and the maintenance of custodial services. (H. H. C.)

3 Arnold, Harold Ramble
A STUDY OF PROCEDURES AND PRACTICES EMPLOYED IN THE DEVELOPMENT OF BID SPECIFICATIONS FOR SUPPLIES AND EQUIPMENT IN SELECTED SCHOOL DISTRICTS
University of Pittsburgh
Pittsburgh, Pennsylvania. June 1963, 420 pp. University Microfilms 63-2453

Consideration was first given to the establishment of quality controls, including procedures and practices involved in the use of, revision of, and participation in the formation of supply lists; examination and resolution of requests for items not on supply lists; the determination of standards; means employed for users to become acquainted with items of supply and equipment; and the extent of testing. Consideration was then given to factors involved in the establishment of quantity controls. A third consideration involved a study of the procedures and practices related to the issuance of the bid specification document. Major conclusions of the study were: (1) recognized authorities are not in agreement concerning what constitutes effective procedures and practices; (2) effective procedures and practices, in general, characterize about half of the districts; (3) districts which most closely follow effective procedures and practices are the larger districts, districts whose administrative organizations are most complex,districts whose storage facilities are considered adequate, and districts whose purchasing procedures and practices are based on written policy; (4) the most effective procedures and practices are found in all types of districts as are also the least effective procedures and practices; and (5) although there is marked variation in the type, extent, and effectiveness of the participation of persons concerned with the educative process in the selection of products and the preparation of bid specifications for products, most districts make provisions for some degree of participation. (T. E. J.)

4 Bergstrom, Carl Theodore
AN ANALYSIS OF THE IMPACT OF PROGRAM CHANGE ON SCHOOL PLANTS
Michigan State University
East Lansing, Michigan. June 1962, 177 pp. University Microfilms 62-1637

Major conclusions of the study included:

1. Where major program modifications occur, the educational adequacy of existing school plants decreases significantly.

2. Where major program modifications occur, the educational adequacy of old school plants tends to be reduced significantly more than new school plants.

3. Where major program modifications occur, the education adequacy of middle-aged school plants tends to be reduced slightly more but not significantly more than new school plants.

4. Certain items may be singled out as contributing most to the reduction in educational adequacy as a result of program modification, namely, and in this order:
   a. Classroom shortage.
   b. School layouts hamper easy movements from place to place.
   c. Academic classrooms tend to be too small.
   d. Gymnasiums, cafeterias, and similar general service facilities tend to be too small in the event of expansions.
   e. Toilet facilities become inadequate.
   f. Walls between adjacent rooms are too often load-bearing and not easily moved.
   g. Some rooms are not as cheerful and attractive as they should be.
   h. Playgrounds, outdoor areas, and recreational areas are not, in all school plants, readily accessible to pupils who use them.

i. General service provisions are not always readily accessible.
j. Some sites are not attractively planned and landscaped.

(T. E. J.)

5 **Beynon, John**
DESIGNS FOR EDUCATION - 1963
School Planning Laboratory, Western Regional Center
Stanford University
Stanford, California. 24 pp.

Report on several areas of school plant planning with emphasis on independent study and the quest for flexibility. The one thing on which educators do seem to agree is that independent study space, coupled with independent study materials, is essential for an up-to-date program and that over the long haul independent study will increase. Examples of the use of carrels scattered throughout the building, clustered around the library, carrels for every student, multi-use carrels, and carrels in resource centers are reported and floor plans shown. On the quest for flexibility, examples are given for operable walls, classrooms without walls, mobile equipment, educational television, and multiple use of certain areas. Floor plans are shown for each of these concepts. The report concludes with an indication that carrels are still in the experimental stage, the quest for flexibility is never ending, more research is needed in the field of acoustics, more research on open planning and the effects of educational environments. (J. H. H.)

6 **Boyer, E. G., Essex, S. R., and Grant, A. E.**
HOUSING RHODE ISLAND EDUCATION IN THE FIFTIES
Rhode Island State Department of Education
Providence, Rhode Island. 1962, 68 pp.

This is a comprehensive report of the status of school facilities in the State of Rhode Island for 1959. Significant data are provided regarding school construction costs for different types and locations of schools, the age of buildings in use, the utilization of existing plant, the extent to which specialized facilities are available, the degree of overcrowding, enrollments, temporary and make-shift facilities, and contemplated school construction. The appendix contains tables providing comprehensive information relative to school construction costs per pupil and per classroom cost for all schools built in the state from 1949 to 1961. There are also tables summarizing the inventory taken of all school facilities in the State in December, 1959. (C. O. W.)

7 **Brubaker, Charles W.**
EFFECT OF CHANGING EDUCATION TECHNIQUES ON DESIGN OF FACILITIES
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 4 pp.

The design of educational facilities is ultimately a reflection of educational techniques. Team teaching, a trend toward smaller schools, individual study, and new teaching aids, are all having an effect upon facility design. The trend is toward flexible and uncommitted use of space and away from departmentalization. (H. H. C.)

8 Brubaker, Lowell Kurtz
OPENING NEW HIGH SCHOOLS
University of Southern California
Los Angeles, California. January 1963, 211 pp. University Microfilms 62-6042

Major findings of the study included: (1) The district curriculum pattern is generally followed in new high schools. (2) Appropriations in the first year for instructional supplies should be increased between two and four times the average amount expended in an established high school. (3) The most satisfactory combination of grades with which to open a new high school is nine, ten, and eleven. (4) Involvement of students in opening the new high school enhances their morals. (5) A dynamic program of community relations is necessary to obtain acceptance of the new high school by the community. (6) Transfer and employment of personnel are practiced on a policy basis. (7) The principal is needed on the job full time one year before opening date. (8) A balance of experience, age, male and female in the faculty is desirable. (9) Policies and procedures established prior to opening date are necessary for the functioning of a new high school. (10) A period of two and a half years is necessary to plan and construct a high school. (11) A priority of facilities is necessary when a complete high school plant is not built. Some of the major conclusions set forth were: (1) Advance plans made on a scheduled basis are necessary for the satisfactory opening of a new high school. (2) The amount of funds per average daily attendance necessary to provide adequate supplies for a new high school is in excess of that amount required for an established high school. (3) The assignment of the principal one year before opening date is strategic to the satisfactory opening of a new high school. (T. E. J.)

9 Campbell, Stanley Clinton
RELATIONSHIP BETWEEN THE COMPREHENSIVENESS OF SCHOOL PLANT PLANNING PROCEDURES AND THE QUALITY OF RESULTANT SCHOOL PLANTS
University of Wisconsin
Madison, Wisconsin. December 1961, 452 pp. University Microfilms 61-5900

Major conclusions of the study were: (1) A negative relationship was found between the comprehensiveness of planning and juror evaluations of plant quality: two of the three districts which ranked high in planning ranked low in quality, and vice versa. (2) A negative relationship prevailed also between comprehensiveness of planning evaluations of plant quality by teachers, but a positive relationship was found between the planning factor and evaluations of quality by principals. (3) A negative relationship was revealed between comprehensiveness of the school building survey and willingness of the electorate to finance the building program. It appears that wide participation and prudent selection of survey procedures are more effective in convincing the public of school building needs than the utilization of a large number of survey techniques. (4) A comparison of the extent of teacher participation in planning and their evaluation of plant quality revealed that a positive relationship existed. Teachers who participated to a greater extent in the planning program were more satisfied with the resultant facilities. Responses by teachers revealed that the most serious deficiencies in the new school plant pertained to inadequate control of light, heat, and sound, and lack of flexibility to meet the needs of emerging educational practices. (5) Failure to prepare written educational specifications appears to be the greatest weakness in school plant planning programs. (6) Many complex factors, involving patterns of human relationships are involved in the school plant planning process. Each planning situation is unique, and factors which tend to influence quality tend to vary from one situation to another. (T. E. J.)

10 Carioti, Frank, and others.
RELOCATABLE SCHOOL FACILITIES NATIONAL SURVEY 1962-1964
Educational Facilities Laboratories
477 Madison Avenue
New York, New York. May 1964, 66 pp.

This publication attempts to present in graphic form many types of relocatable classrooms, from fairly satisfactory ones to those that are superior. It should be valuable information for school officials plagued by lack of financial ability to provide proper facilities for increasing school enrollments. Included is a table in which 23 cities are listed which have furnished relocatable classrooms, with comparable data on the size and type of school district, pupil enrollment, size and type of structure, cost per unit of construction, and transportation cost per unit. Guidelines are presented for planning all types of relocatable structures including:. (1) adequate space in room or building, (2) appearance of room, (3) relationship of relocatable unit to other units and to the entire school plant, (4) structural system, (5) movability of structure, (6) cost of structure per life expectancy of building, (7) and others. Census figures show 20 percent of our population moves each year, locally, out of county, or out of state. Thus 12 percent of school age children move from one school to another during the school year. Relocatable classrooms appear to be the solution to school districts that are harassed by the problem of skyrocketing enrollments and inadequate financing. (A. B. G.)

11 Caudill, William W.
FUTURE CHALLENGES IN SCHOOL PLANT ECONOMIES
Proceedings of School Facilities Conference
University of Houston,
Houston, Texas 77004. 1961, pp. 3-10.

Six educational challenges which must be responded to by all who are interested in the expansion of the schools: (1) teaching machines (2) education TV (3) modern mathematics and science (4) the creative arts (5) non-graded programs and (6) team teaching. The architectural responses to these six challenges require those who plan schools to think more precisely and more clearly. Millions of dollars can be saved by enlarging our vision to see through the fog or present regulations and antiquated concepts what an adequate school building is to be in the future. (C. S. B.)

12 Chase, William W.
SCHOOL SITE SELECTION AND UTILIZATION
The American Institute of Architects
1735 New York Avenue, N. W.
Washington, D. C. 20006. March 1965, 5 pp.

The site is being increasingly recognized as just as much a part of the total school plant as the building and equipment. Effective utilization of the site is equally important. This depends on (1) a well-defined statement of educational needs; (2) selection and acquisition of a site to accommodate those needs; and (3) development of the site to facilitate efficient and effective operation of the program. Criteria for site selection include (1) health and safety, which relate to pleasing and desirable neighborhood, free from excessive noises, smoke, dust, odors and traffic. (2) suitability or ability to accommodate isolated areas for preschool, free play, or low organization games; areas for handicrafts and quiet activities; areas for field games for both boys and girls; areas for adults; areas for playground apparatus; multiple-use paved areas for court games, etc.; science and nature study areas; gardening space; and landscaped areas for site beautification. Site location should relate to distance pupils walk to school; for elementary this is three-fourths of a mile, for junior high one and one-half mile, and for senior high, two miles. The size of site depends on organization, educational activities, building design, anticipated enrollment, community activities, driveways, and future expansion. A table of site size ranges from 3.43 acres for an elementary school of 120 to 12.11 acres for 810 pupils. Cooperation between and among the various school and community groups, and the processes of educational planning and architectural design are just as important in site planning as in building planning. (J. H. H.)

13 Cherry, Ralph W.
IMPLICATIONS OF CHILD GROWTH AND DEVELOPMENT FOR SCHOOL
PLANT DESIGN - Research Report 6
American School and University
737 3rd Ave.
New York, New York. Vol. 27, 1955-56

Extensive and exacting research in child growth and development has revealed many facts and principles which have important implications for the school plant. This report attempts to indicate the various types of information which can and should be obtained and to suggest some good sources for further study. Four of these important principles presented with a few comments concerning their implications, are: (1) development is a product of two factors--learning and growth; (2) human growth and development follow an orderly pattern; (3) individuals differ in rate, pattern, and ultimate level of development; (4) all aspects of growth and development are interrelated. Specific characteristics and needs of children of various ages are given for the primary school child, the pre-adolescent, the adolescent, the adolescent, and for all children. The child is the only yardstick by which a building can be properly measured and evaluated. (M. W. B.)

14 CLASSIFICATION OF BUILDING AREAS
National Academy of Science
National Research Council
Washington, D. C. 1964, 15 pp.

Reports on the evaluation of existing methods of categorizing areas in buildings, for pertinency to the requirements of federal agencies. Recommendations and criteria for classifying, defining and measuring building areas are outlined with reference to six area types believed expressive of the complete building and its functions. These areas include: (1) gross area, (2) net assignable area, (3) custodial area, (4) circulation area, (5) mechanical area, and construction area. There is a supplementary discussion concerning the study of conservation in building construction. (H. H. C.)

15 Collins, George J.
NATIONAL INVENTORY OF SCHOOL PLANTS
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 5 pp.

If America is to know the true status of its elementary and secondary school facilities, a national cooperative effort must be made by state, local, and national authorities to pool all information available in a central location. The First National Inventory of School Facilities and Personnel is such an attempt. This paper describes the methodology used in the inventory, indicates the type of data collected, and presents a representative tabulation of facilities in a single state. (H. H. C.)

16 COMMUNITY COLLEGES IN URBAN SETTINGS
School Planning Laboratory
Stanford University
Stanford, California. December 1963, 20 pp.

A booklet based upon the deliberations of a two-day work conference of the Community College Planning Center of Stanford University, December 19 and 20,1963. Architects, urban planners, community college presidents, and educatio[illegible] theorists studied the question: "Where should a community junior college campus be located--in the suburbs, with inexpensive land and automobile accessibility, or in the heart of the city near the heaviest population concentration?" The booklet describes the significance of urban life in the society, shows how community college might share that significance and includes aids, sketches, and suggestions for planners contemplating an urban setting for colleges. It is divided into the following major headings: (1) The Nature of Urban Society; (2) Educational Change; (3) Location of Colleges; (4) Implementive Devices. A series of sketches suggesting growth patterns and new concepts of college planning in urban areas brought forth unique ideas on vertical, horizontal, and non-continguous expansions; waterfront sites: afloat, ashore and on fill in shallow water; and multi-use of property: under offices, under apartments, over shopping centers, over parking areas, and over expressways. The conclusion reached by the conference was "The community college is faced with the duty, the challenge, and the opportunity to revitalize the economy with productive urban wage earners and to revitalize each individual with a sense of human worth and dignity." (M. W. B.)

17 Conrad, M. J. and Biggins, Neil
CARPETING AND LEARNING
The Ohio State University
Columbus, Ohio. November 1963, 14 pp.

A research study of acoustical floor covering to determine how carpeting affects the total sonic environment and whether it has any effect upon pupil behavior and learning. The project was designed to measure: achievement; personal and social characteristics; the sonic environment; pupil behavior; and the attitude of pupils, teachers, and parents. The results indicated that although carpeted classrooms provide a measurably superior sonic environment to non-carpeted classrooms, this superiority was reflected in significantly greater pupil achievement only in the primary grades. Carpeted floors won the approval of teachers and pupils in grades 1-6 and the approval of the majority of parents. (M. J. C.)

18 Conrad, M. J.
4 STEPS TO NEW SCHOOLS
The Ohio State University Bureau of Educational Research
and Service and Ohio School Boards Association
Columbus, Ohio. 1963, 33 pp.

Summarizes the school plant planning process from determination of needs to completed plant. Includes a set of guidelines to assist the inexperienced school planner and board members in formulating and organizing their plan of action in providing new school plants. Sections include those considerations which pertain to the district wide building survey, educational planning, architectural planning, and moving in and setting down. The final section includes other ideas relating to planning new schools, including: (1) who should be involved, (2) the school site, (3) size of school centers, (4) economy, (5) multi-use facilities, and (6) where to go for additional help. (M. J. C.)

19 A COOPERATIVE EFFORT IN EDUCATION PLANNING, ACTION, SUCCESS
Western Regional Center
Educational Facilities Laboratories
Stanford University
Stanford, California. 1960, 28 pp.

A report, using many illustrations, on the planning and construction that took place in the Clark County (Nevada) schools between 1956 and 1960 with the help of the EFL. Space is devoted to the consolidation efforts, the community survey, the $10.6 million bond election, the use of construction experts, the choosing of architects, the developing of educational specifications, the cooperation of other community groups, general descriptions of the new buildings, and outstanding features of the new buildings. (J. H. R.)

20 COORDINATED SCHOOL AND COMMUNITY PLANNING
School Planning Laboratory
School of Education
Stanford University
Stanford California
and
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York. December 1959, 84 pp.

Report of the 1959 School Building Institute conducted at Stanford University. Many prominent educators participated including James MacConnell, Harold Gores, John L. Cameron, W. R. Odell, J. Lloyd Trump, Raymond Schneider, and others. There are 15 individual reports in the document: two of these reports resulted from panel presentations; the remainder of the reports are written by individuals. Only one report deals with coordinated planning which is defined as "that process through which all possible creative talents are brought together." One report outlines a format for the development of educational specifications. Several of the reports deal with school and community relations. One panel discussion was devoted to federal assistance in planning. A major part of this presentation dealt with Public Law 815, its scope and administration. One nine-page report was concerned with college and university planning with special emphasis on Stanford University. An aerial photograph of the Stanford campus is shown. John Cameron listed "discernible trends in school planning." Harold Gores, Robert Bush, and J. Lloyd Trump examine the present educational scene and make suggestions for constructive changes. The last section is a potpourri of activities of the Western Regional EFL Center. Discussed briefly are activities in Hawaii, Alaska, Boulder City, Nevada, and Colorado State College. (R. L. H.)

21 Corlett, William
FLEXIBILITY IN K-12 SCHOOLS: CHANGE IS HERE TO STAY
American Institute of Architects
1735 New York Ave.
Washington, D. C. 1965, 4 pp.

Summarizes demand for flexibility in school building plans and provides sketches and pictures of examples in elementary, middle, and high school buildings. References and summaries are made to the following schools: (1) Troy High School, Fullerton, California, (2) Killian School, La Puente, California, and (3) Wolf Grade School, Kentfield, California. (H. H. C.)

22 Covina-Valley Unified School District
BLUEPRINT FOR TOMORROW-TODAY
Educational Facilities Laboratories, Inc.
Stanford, California. August 1963, 12 pp.

This research, supported by a grant from Educational Facilities Laboratories, is an attempt to plan schools for the district that would combat obsolescence by building in flexibility to accommodate educational changes as they occur. The grant permitted use of outside consultants as well as local administrators and teachers. The three objectives were as follows: (1) more opportunities for individual instruction, (2) better use of teacher skills, and (3) flexible spaces to accommodate the latest methods and equipment. The flexibility provided for large group instruction, small group instruction, and independent study. The result was the development of three learning centers, namely, Humanities, Math/Science, and Instructional Resource Center, plus other supporting facilities including art, crafts, business education, home economics, music, industrial arts, physical education, food services, and administration. The South Hills High School involves a variety of shapes and sizes of rooms with opportunities for division of spaces into smaller areas. The cost of the school, built in 1964, compared favorably to two other schools, built in 1956 and 1960, due to the efficiency of planning. (J. H. H.)

23 DESIGNING THE SCHOOL PLANT FOR ECONOMY
Economy Series No. 4
State Department of Education
Hartford, Connecticut. June 1961, 59 pp.

Presents standards or steps to planning and design of functionally adequate and economical school buildings. Determining the purpose and need for space, and the preparation of educational specifications are the beginning steps. From the educational specifications the architectural firm develops preliminary drawings and studies which provide cost, size, and quality data. The aesthetic or "character" factors are developed by the architect. Various cost comparisons should be used. The three common comparisons are cost per square foot, cost per pupil, and area per pupil. Space utilization analysis is important because non-productive space is just as expensive to build, operate, and maintain as productive space. Such factors as circulation, utilization, and compactness can contribute to economy. Special areas for community use and combination use such as auditoriums, cafeterias, stage, music, classroom laboratory, gymnasium - auditorium, and multipurpose rooms can affect economy. Single-story vs. multi-story comparisons are made indicating the advantages and disadvantages. Environmental factors and their control are discussed in some detail. Relationships of elements are important for efficiency, including placement of the facility on the site, treatment of site, and projecting all planning for future expansion and change in curriculum, and innovations and trends in instruction. (D. O. B.)

24 Doherty, Leo D. and Wheatley, Artrelle
A REVIEW OF STUDIES OF ECONOMIES IN SCHOOLHOUSE CONSTRUCTION
The University of the State of New York
The State Education Department
New York, New York. May 1960, 27 pp.

Summary of economies in school construction. Discussion is divided into the following categories: present day economy, planning and design, multi-purpose rooms, perimeter walls, ceiling heights, waste space, the use of glass, stock plans, sites and site development, material and methods, prefabrication, modular design, maintenance, temporary buildings, financing, and timing. Two conclusions: (1) "There is no magic formula that will guarantee a low cost schoolhouse. The low cost school can be obtained only as a result of the accumulation of savings in all aspects of the building program." (2) "Economies in construction are the result of careful planning. Good educational planning leads to the use of funds for facilities that are necessary for a good educational program, without waste of space or materials, to the use of materials for long-term economy in maintenance, and to good timing consideration." (E. J. M.)

25 Educational Facilities Laboratories
TO BUILD OR NOT TO BUILD --- A Report on the Utilization and
Planning of Instruction Facilities in Small Colleges
477 Madison Avenue
New York 22, New York. March 1962, 38 pp.

A self-study manual aimed at colleges of 3,000 or smaller enrollments. The comparative data provided resulted from research conducted by John X. Jamrich of Michigan State University. Data were collected from more than 60 four-year, degree-granting liberal arts colleges in the north central area of the United States. An analysis of the self-study and planning process at the institutional level is supplied. Information is supplied concerning characteristics and trends found in small colleges and also about the physical characteristics of the campus plans. A chapter is devoted to the utilization of instructional space with suggestions for improving utilization. A sample space utilization workbook is supplied for use in conjunction with the publication in studying space utilization. Emphasis throughout is upon steps which can be taken at the local institution level to gather data pertinent to local problems and essential to their solution. (C. B.)

26 Educational Facilities Laboratories
NEW BUILDING ON CAMPUS, Six Designs for a College Communications Center
477 Madison Avenue
New York 22, New York. 1963, 60 pp.

Presents graphic interpretations by six architectural firms of answers to questions proposed by Rensselaer Polytechnic Institute in the planning of an instructional research and communications center as part of a new science complex. The Rensselaer Institute posed these problems: (1) To teach more students with fewer faculty members; (2) To teach them more effectively; (3) To reduce the overall cost of education. Architects were asked to plan the use of mechanical teaching devices so as to provide: (1) Bigger, better equipped classrooms specifically designed to make the most of all available instructional aids; (2) Studios for producing specialized teaching materials ranging from slides to video tapes; (3) A library of stored materials for reference or review. Tables of affinities are offered in graphic form covering: (1) Public Space; (2) Instructional space; (3) Televsion production; (4) Motion picture production; (5) Communications research; (6) Administration; (7) General service; (8) Maintenance. Architectural firms presenting designs were:

Perkins and Will, Chicago, Illinois, the winning design.
The Architects' Collaborative, Cambridge, Massachusetts.
O'Neil Ford and Associates, San Antonio, Texas.
Hellmuth, Obata and Kassabaum, St. Louis, Missouri.
Kump Associates, Palo Alto, California
Richard W. Snibbe, Architect, New York, New York.

(W. S. B.)

27 EDUCATIONAL SPECIFICATIONS: NEW CANEY INDEPENDENT SCHOOL DISTRICT
Bureau of Education Research and Services
University of Houston
Houston, Texas. November 1963, 146 pp.

A report of a year-long study of the communities which comprise the New Caney Independent School District, along with the survey of educational facilities and program of the school district. The report is presented in four parts. Part I, Planning Data, deals with (1) description of the district, (2) land usage, (3) pupil residence, (4) population density studies, (5) school population trends, (6) financial ability, (7) evaluation of existing facilities, and (8) transportation evaluation. Part II, Projection of Data, deals with (1) estimated future enrollment, (2) future utilization of plant, and (3) program improvement. Part III concerns the educational specifications of each of the units of the school plant. Part IV presents a guideline for school planning. (H. E. J.)

28 EDUCATIONAL TELEVISION: DYNAMIC TOOL FOR TEACHING
Radio Corporation of America
Camden, New Jersey. 19 pp.

Discusses the ways in which television is being used in education including (1) industrial education and training, (2) elementary grades, (3) secondary levels, (4) training by military, and (5) medical instruction. Advantages of TV tape, mobile TV, and TV film are summarized, and educational users of RCA TV tape systems are listed. (H. H. C.)

29 Farmer, Margaret and Weinstock, Ruth
SCHOOLS WITHOUT WALLS
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. 56 pp.

A report on a movement that began about 1957 to develop schools without interior partitions. It explains how these "open-space" schools are a logical outcome of efforts to develop a degree of flexibility of teaching spaces sufficient to permit teaching procedures to be adapted to the great variety and range of differences now recognized among students. It describes the team teaching procedures used at the Dilworth School in San Jose, California, the prototype of current schools with large open spaces instead of traditional classrooms, and shows how the teaching and learning processes are carried on here with a high degree of effectiveness and satisfaction. Reference is made in the text to other schools with open plans and a section of the report is devoted to concise descriptions, with floorplans, of Dilworth and six such other schools built since 1961. The school planner will appreciate the ideas offered. Guidelines are provided in the section entitled "Making Open Space Work." Here are outlined in some detail the problems peculiar to this type of school in respect to acoustics; the use of audiovisual equipment; scheduling; necessary partitioned and adjunct spaces; and furniture, furnishings, and equipment. (C. A.)

30 Finstad, Allan
SPECTRUM OF ELECTRONIC TEACHING AIDS IN EDUCATION
Educational Facilities Laboratories
Stanford University
Stanford, California. 1965, 21 pp.

A brief, nontechnical pictorial overview of the educational potential and approximate cost of certain configurations of electronic audio, audio-visual, and television teaching systems. Equipment is categorized according to (a) the extent to which progressive modes of learning are served, (b) the nature and complexity of the hardware and systems, and (c) the estimated budget required to achieve a given systems configuration. The publication is designed to help school administrators and staff members visualize the overall spectrum of electronic teaching systems in gradation of function and cost. Information is presented by means of pictures, diagrams, and room layouts. A brief description of functions and a cost estimate is given for the various systems. Included are various types of tape recorders, a dictation laboratory, a library listening facility, language laboratories, slide and motion picture projectors, a classroom communicator, a multi-media teaching system, television cameras, receivers, and closed circuit television systems. Budgets for the systems range between $150 and $65,000. (E. J. M.)

31 The Five-Year Building and Future Sites Commission
A SCHOOL BUILDING AND FUTURE SITES PROGRAM 1966-1970
Board of School Directors
Milwaukee, Wisconsin. January 1965, 112 pp.

A list of the school building needs of a large city school system for the years 1966-1970 along with supporting population and enrollment data. The cost of the proposed program is $45,745,000. Special attention is given to educational policies and how they affect the school building program. Attention is given to the "continued conversion of the Milwaukee Public Schools to the 6-3-3 Plan." A report on the program of elementary school modernization carried on by the Milwaukee Public Schools is included along with a proposal for extending the program to the secondary school plant. The report also deals with school building needs in an undeveloped 16-square-mile area recently annexed to the city. (E. J. M.)

32 The Five-Year Building and Future Sites Commission
A SCHOOL BUILDING AND FUTURE SITES PROGRAM 1961-1965
Board of School Directors
Milwaukee, Wisconsin. May 1960, 95 pp.

Report of a 66 million dollar, five-year school building program for Milwaukee, Wisconsin. Supporting data such as enrollments, births, school census data and annexations to the city are presented to show the need for additional school buildings. Estimated costs and revenue requirements for the building program are included. Data is presented through the use of tables, charts, and graphs. A list of previous construction projects completed for the years 1950-1960 is also included. Special emphasis is given to educational policies and the school building program, factors affecting school building needs, and the need for a modernization program for older school buildings. (E. J. M.)

33 Flanigan, Jean M.
ELEMENTARY SCHOOL FACILITY NEEDS
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 6 pp.

It is possible to make predictions, within wide limits, for elementary school needs on the national level through 1968. Breakthroughs by states and districts are much less certain because of the variable of migration, and projections to 1980 are uncertain because of the difficulties of estimating birth rate. This paper explores elementary school building needs in the immediate and foreseeable future as they are likely to be affected by these and other variables. (H. H. C.)

34 Florida State Department of Education
SCHOOL PLANT SURVEY, MONROE COUNTY SCHOOLS, 1965
State Department of Education
Tallahassee, Florida. November 1965, 40 pp.

Reports survey of the present school plant problems of the Monroe County school system and the established needs through 1970-71. Survey is limited to the study of school building needs and takes into consideration the following factors (1) school size; (2) temporary buildings; (3) portable buildings; (4) pupil stations; (5) desirable pupil capacity; (6) initial and ultimate pupil capacity; and (7) use of state funds for recommended facilities. (H. H. C.)

35 Fuller, William S.
SPACE ALLOCATION, PUPIL CAPACITY, AND UNIT COSTS OF TWENTY SELECTED PUBLIC SECONDARY SCHOOL BUILDINGS CONSTRUCTED IN INDIANA DURING 1948 to 1958
Indiana University
Bloomington, Indiana. September 1960, 337 pp. University Microfilms 60-2999

The major findings of this study were: (1) The high school building which had a high percentage of its gross area in instructional space tended to have a small gross area, a small enrollment, four grades (9-12), and to be a non-member of the North Central Association. (2) The high school building which had a low percentage of its gross area in instructional space tended to have a large gross area, a large enrollment, three grades (10-12),and to be a member of the North Central Association. (3) The three computed pupil capacities showed a wide range of capacities for the same building, depending upon which definition was used. (4) The high school building with low unit costs tended to have a small gross area, a small enrollment, six grades (7-12), and to be a non-member of the North Central Association. (5) The high school building with high unit costs tended to have a large gross area, a medium enrollment, four grades (9-12), and to be a member of the North Central Association. (T. E. J.)

36 Gang, Seymour
INFLUENCE OF SCHOOL PLANT UPON PERSONALITY RATINGS OF ELEMENTARY SCHOOL CHILDREN IN THE NEW YORK CITY PUBLIC SCHOOL SYSTEM
New York University
New York, New York. August 1962, 114 pp. University Microfilms 62-1396

This study reported that the mean changes in Personality Profile coefficients for each group and sub-groups indicated: A significant difference in favor of the Puerto Rican pupils in the study school appears at the fifth and sixth grade levels. At the sixth grade level this is largely due to the marked positive change of the Puerto Rican girls to average IQ. Where a significant difference had been found between the mean changes in the Personality Profile Coefficients in the study and comparison schools, a further check indicated that a significant difference within the study school appears in favor of the below average IQ group when that group is compared with the above average IQ group at both the fifth and sixth grade levels. While this study did not establish the hypothesis that changing environment results in personality change for non-Puerto Rican children of middle income families, though there seemed to be a consistent difference in their favor, it did establish the hypothesis for a large segment of the Puerto Rican children. The total impact of the dramatic change of environment for the Puerto Rican children was probably so penetrating as to have a marked affect upon their personality development. (T. E. J.)

37 Gatski, Henry Joseph
A COMPARISON OF FOUR FORMULAE FOR RATING PUPIL CAPACITY OF SCHOOL BUILDINGS IN THE STATE OF PENNSYLVANIA
Pennsylvania State University
University Park, Pennsylvania. September 1963, 124 pp. University Microfilms 63-6294

In this study it was found that upon the initial occupancy of the 50 selected school buildings, the entrance enrollment data indicated that 6 schools had enrollments that exceeded the Pennsylvania formula's rated capacity. The percentage of difference between the entrance enrollment and capacity produced a range from .40 to 16.2 percent. The comparison of the current enrollment with the same rated capacity indicated that 20 of the 50 schools had an enrollment that exceeded their rated capacity. The percentage of difference produced a range from .80 to 36.8 percent. The current enrollment data further indicated that a total of 23 schools had enrollments that were near or had exceeded their rated capacity. An inquiry to the administrators of the 23 schools concerning the effect of the enrollment upon their educational program indicated that 9 schools expressed no apparent effects. The remaining 14 schools expressed varying degrees of effects. Two schools indicated that they were compelled to operate on half-day, or double sessions, as a result of the increased enrollment over capacity. It was suggested that results of this study be used to review the present rating capacity formula, and that a similar study be conducted periodically to ascertain the adequacy of the then existing rating capacity formula. (T. E. J.)

38 Goleman & Rolfe, Architects, Engineers
Houston, Texas
ENVIRONMENT FOR LEARNING
Carrier Corporation
Syracuse, New York. February 1960, 19 pp.

An impartial determination as to whether a new approach to the problem of designing a school building might produce an educational facility which, in the judgment of educators, would be better for the teacher, the pupil, and educational program today and tomorrow, and would cost no more--or perhaps less--than schools currently under construction. There were five guideposts that helped to chart the course of investigation in the statement of objectives: (1) a fresh approach, unrestricted by old conventions and prejudices; (2) an educator-oriented study; (3) a means of comparing the research design with contemporary school design; (4) a workable definition of what constitutes a better school for today and tomorrow should be determined with the educator; and (5) cost must be a major design consideration. (M. N. B.)

39 Goodman, Elizabeth
HOW CAN WE IMPROVE AND PROFESSIONALIZE LUNCH ADMINISTRATION?
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 5 pp.

Recommends improvement and professionalization of school lunch administration within the following areas: (1) professional training, (2) work background, (3) encouragement of inservice training in workshops, meetings, and visiting other schools, (4) participation with school business official in financial operation of lunch programs, and (5) development of top level policies concerning school holidays, vacation, etc. (H. H. C.)

40 Gray, Stuart C.
A STUDY OF THE RELATIONSHIP BETWEEN SIZE AND A NUMBER QUALITATIVE AND QUANTITATIVE FACTORS OF EDUCATION IN FOUR SIZES OF SECONDARY SCHOOLS IN IOWA
State University of Iowa
Ames, Iowa. February 1962, 150 pp. University Microfilms 61-5568

Enrollment groups used in the study were: A schools, 1,000 and above; B schools, 400-499; C schools, 150-399; D schools, 0-149. Major findings included: (1) Student Achievement and College Enrollment - Very small differences in standard score units favoring the larger schools were found on the Iowa Test of Educational Development. These differences were not significant at the .05 level. No significant differences were found in college freshman grade point earned. The B group obtained a slightly higher GPA than did the A group. The D group was lowest on this measure. The B and C groups sent about nine percent more graduates on to college than did the A or D groups. This difference was not significant. (2) Faculty Characteristics - There was a significantly larger turnover of staff in the small schools, and a significantly smaller number of teachers in their major field or preparation in the small schools. No significant difference was found in number of periods taught per day by teachers among the four groups of schools. (3) Cost and Breadth of Program - A positive relationship was found between size of school and the number of units of educational opportunity available among the four size groups. There was an inverse relationship between size of school and the cost of these units when instructional salary was used as the cost factor. The annual per pupil tuition cost among the four groups was significantly different at the .05 level. The B group was found to be costing the least and the D group was costing the most. (T. E. J.)

41 GREENWICH CONNECTICUT HIGH SCHOOL SURVEY
Caudill, Rowlett and Scott
3636 Richmond Avenue
Houston, Texas. July 1960, 93 pp.

Analysis of an existing high school building in terms of space use and as the space is related to the educational specifications for a new high school program. Specific descriptions of existing space and the architectural steps necessary to transform the present building into new educational space are included. (R. L. F.)

42 GUIDE FOR PLANNING OF SCHOOL BUILDINGS AND SITES IN MINNESOTA:
SCHOOL PLANT PLANNING
Minnesota Department of Education
State Department of Administration
St. Paul, Minnesota. 1966, 207 pp.

A detailed manual composed of three parts. Part one is concerned with state and local responsibilities in school plant planning and procedures for planning and constructing school building. Part two is concerned with the selection of school site and site development, school instructional facilities for both elementary and secondary schools, central and auxiliary facilities, and service facilities. Part three is concerned with fire and life safety, structural design, sound control, lighting and fenestration, plumbing design, sanitary fixtures and trim, heating, and ventilation. Several tables, formulas, and standards are given. (H. E. J.)

43 Hickey, Philip J.
LONG RANGE PLANNING AND FINANCING OF SCHOOLHOUSE CONSTRUCTION
1955 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 10 pp.

Procedures used by the St. Louis, Missouri school system in planning for school construction. Use of planning committees are made in making surveys and recommendations to the office of the superintendent. The program is divided into a three-step program: (1) provision for building facilities, (2) modernization of facilities, and (3) replacement of old buildings. Procedures for collecting recommendations, acquiring professional services, financing, fund raising, and planning election campaigns are summarized. (H. H. C.)

44 Hill, Wallace C.
SCHOOL DISTRICT REORGANIZATION IN THE TEXAS GULF COAST REGION
Bureau of Educational Research and Services
University of Houston
Houston 4, Texas. August 1960, 186 pp.

Acknowledging that there are pertinent concepts and school administrative precepts involved in any plan of school organization, the author applies these to existing school districts and evolves a concise redefining of new school districts. The usual criteria are employed in statistical tables to help clarify the essentials of a school district. For the novice seeking a way to reorganize his school district or districts, this is an excellent guide for steps and procedures. The document contains a glossary of terms and a compilation of laws pertaining to school district organization and consolidation. The recommendations are made in relation to the five criteria of the study; namely tax structure,economy of operation, curriculum development, staffing, and physical assets. The author after analyzing available objective data produces an illustrative Master Plan. (T. S. G.)

45 Hoerner, Henry Rhodes
A COMPARATIVE INVESTIGATION OF THE ROLE EDUCATIONAL PLANNING PLAYS IN DETERMINING SCHOOL PLANT DESIGN FOR PUBLIC ELEMENTARY AND SECONDARY SCHOOLS IN THE STATE OF DELAWARE
Temple University
Philadelphia, Pennsylvania

Based on questionnaires and interviews, it was concluded that educational plans should include information about: (1) philosophy, aims, and objectives; (2) program organization to be considered; (3) functions to be performed; (4) techniques and methods to be used; (5) space relationships; (6) quantitative and qualitative requirements; (7) information on the pupils that will use the plant; and (8) long range planning data. (P. J. O.)

46 Holley, C. E.
THE PLANNING AND CONSTRUCTION OF LOUISIANA SCHOOL BUILDINGS
State Department of Education of Louisiana
Baton Rouge, Louisiana. March 1964, 155 pp.

This handbook was prepared by a state-wide committee composed of professional and lay members. The first chapter dealt with the following topics: (1) The Survey, (2) Preliminary Planning, (3) Analysis and Revision of Preliminary Plans and Agreement on Scope of Work, (4) Organization of and Conducting the Campaign for Public Support of the Program, and (5) Legal Procedure for Issuing School Building and Equipment Bonds. Chapters two and three are concerned with Sites and Buildings respectively. Chapter four was divided into the three topics of (1) General-Purpose and Special School Rooms, (2) Areas for Specialized Use, and (3) Areas for Use of All Students. In the remaining three chapters of the handbook, attention was given to (1) Service Systems and Safety Precautions, (2) School Furnishings, and (3) Minimum Recommendations for Shelters in Schools. Essentially the handbook was designed to provide guidelines for school administrators and others in decision-making roles who are responsible for the school building programs in the State of Louisiana. The various recommendations were minimum in nature and did not purport to represent optimum situations. The 1964 bulletin is a revision of an earlier handbook prepared and published in 1954 by the State Department of Education of Louisiana. (T. E. J.)

47 Holt, E. E. and others
GUIDELINES FOR SCHOOL BUILDING PLANNING
State of Ohio, Department of Education
Columbus, Ohio. April 1964, 118 pp.

A detailed and complete set of guidelines for school building planning. Developed for the State of Ohio, the guidelines are intended to be suggestions for planning State Assistance Programs as well as local initiative building programs in that state. The document uses an outline format throughout. Overall approaches to school building planning along with suggestions for best utilization of the document help the reader become oriented to the main body of the report. Highly detailed and specific requirements for elementary, junior high, and senior high school buildings are treated in separate chapters. These chapters treat the facilities for each educational level from size and site, through every specialized area (i. e., faculty room, kindergarten, library) outlines the fixed equipment, finishes, and loose or movable equipment needed therein. Throughout the document "desirable features" are high-lighted by being placed in a box. The final chapter, prepared by the Architects Society of Ohio, presents cost factors by region for school construction in Ohio. These data are presented in tabular form for easy reference and comparison. This chapter concludes with a listing of costs for various kinds of additions to existing buildings. (G. R. R.)

48 Howland, Richard L. and others
LONG RANGE PLANNING AND EDUCATIONAL SPECIFICATIONS
FOR SCHOOL BUILDING ECONOMY, Economy Series No. 2
Connecticut State Department of Education
Hartford, Connecticut. June 1962, 40 pp.

Long Range Planning is the second of a series of publications by the Connecti-State Department of Education on school plant planning. Here is a brief, terse arrangement of techniques, graphs, and statements that could be beneficial to school boards and community committees planning new school plants and the best use of present facilities. It is an attempt to present as much useful information as possible in a minimum of words. Educational specifications are stressed as basic to any good school plant planning, and the steps necessary in making sensible educational specifications are stated in simple, understandable statements. Included are formulae for finding pupil capacity and the number of teachers needed for certain facilities. (A. B. G.)

49 Hummel, Robert E.
EDUCATIONAL PLANNING PROCEDURES FOR SCHOOL BUILDING CONSTRUCTION
University of Southern California
Los Angeles, California. June 1961, 456 pp. University Microfilms 61-1697

Major findings of the study were: (1) Written educational specifications had been prepared by 59 percent of all districts surveyed; (2) Participants in educational planning were in rank order of frequency of use: architects, principals, coordinators and directors of curriculum, supervisors, teachers, classified personnel (custodians, cooks, maintenance men and transportation workers) members of governing boards, the Bureau of School Planning, the lay public, and county schools personnel; (3) The evaluation of recently completed buildings was used for improved planning by 87 percent of the districts; (4) Planning directors favored the use of master teachers of long experience, departments heads, and non-teaching personnel for assistance in educational planning; (5) Lack of time was the problem most frequently encountered in educational planning; (6) The primary contribution of the administrative staff was leadership; without it planning failed; (7) Architects estimated one-fifth of the total school building planning time should be devoted to educational planning; (8) Only two-thirds of the architects surveyed had received written educational specifications; (9) Architects were concerned about the reluctance of school districts to study long range objectives becuase of immediate pressures for space; (10) All architects believed the preliminary building plans and specifications should be received by the superintendent. (T. E. J.)

50 Hutcheson, David W. and others
SCHOOL SURVEY REPORT, FAIRMONT, NEBRASKA
Nebraska State Department of Education
Lincoln, Nebraska. October 1962, 10 pp.

Most state departments of education have school building consultants who make surveys of existing facilities and give reports on their findings along with suggestions for improvement. In Nebraska the State Department of Education works cooperatively with the University of Nebraska in providing communities with educational surveys and professional advice toward better schools and better buildings. This Fairmont Report is typical. One or more consultants visit a school plant, make note of the type of community, type of facilities, population status, school organization, and program offerings. An oral report might be given to the board of education, and a written report is submitted later along with recommendations for improvement. As every school community is different from others, this Fairmont Survey Report would not fit the layout of any other school but it might show how consultants work, and give suggestions that might be used as check-points for other school systems. (A. B. G.)

51 Hutcheson, David William
STATE SCHOOL PLANT SERVICES
University of Nebraska
Lincoln, Nebraska. April 1963, 343 pp. University Microfilms 63-2643

The study indicated there was a wide range in the scope and type of services provided and controls exercised by the various education agencies in the school plant field, and that authorities in the school plant field generally agree that the standardization of services was not feasible under conditions of widely varying practices in the delegation of responsibility and authority for school plants to state education agencies. A continuing trend toward greater participation by state education agencies in providing services on local school plant programs was also noted. Additional conclusions of the study were: (1) Generally, state boards of education are granted authority to set policy and evaluate the results of state education agency participation in local school plant programs; (2) Most state education agencies offered school plant services of an advisory and consultative nature; (3) Provisions for assistance in the development of educational specifications is an expanding type of service; (4) Services provided by state education agencies are in the process of being expanded in the areas of school plant operation and maintenance; (5) The services of universities are only infrequently reported as being utilized by state education agencies although several members of the jury of experts advised the use of competent university personnel; and (6) Most state education agencies provided assistance on local school plant surveys. (T. E. J.)

52 Jones, Rolland W. and others
THE KLEIN CONCEPT FOR TEAM TEACHING AND CONTINUOUS
PROGRESS EDUCATION
Mountain View School District
Mountain View, California. January 1967, 28 pp.

A grant of funds from the federal government enabled the California State Department to publish a document describing the 25 best California schools 1960-65. The Victorine Klein is one of these featured schools. The "Klein Concept" grew out of the desire that the teaching-learning environment--curriculum, people and buildings--should meet the needs of individual children. The discussions of flexibility, team teaching, and continuous progress present a clear picture of the implications for a building program. The architectural solution was a complex of five buildings, three classroom pods containing 5 classroom areas, one kindergarten pod, and an administration-library pod. The classrooms are open to a central commons area which is depressed two steps below the classroom levels. A common work-storage area serves each classroom pod. Carpeting is used throughout the buildings and circulation is provided by exterior walkways. The first increment involved 17,940 square feet containing 10 classrooms, commons, instructional materials, library, speech room, storage, and mechanical. Future addition would involve 9,702 square feet containing 5 classrooms and a kindergarten unit. The cost of the first unit was $16.72 per square foot. The report contains ample photographs and a floor plan to orient the reader as to design and structural components. (J. H. H.)

53 Jones, Donald A.
SCHOOL SITE SELECTION
1956 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 12 pp.

Report on considerations for determining and selecting school sites. Site size, shape, accessibility, topography, and eminent domain are given attention. Suggestions for securing appraisal and appraiser's reports are summarized. (H. H. C.)

54 Kansas State Department of Public Instruction
SCHOOL SITES, SELECTION, AND DEVELOPMENT
State Department of Public Instruction
Topeka, Kansas. 1966, 20 pp.

Criteria for site selection and development are listed. Trial analysis, desirable acreage, suitability of construction, site development concerning economy of construction, operation and maintenance, parking space, safety, outdoor activities, and interscholastic athletics are topics covered. Score sheets for rating proposed school sites and table for suggested space allotments for physical education are provided. (H. H. C.)

55 King, Jonathan
THE SCHOOL IN THE CITY: A NEW LOOK
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 4 pp.

City schools generally copy the architecture of schools in the suburbs and do not utilize space in an economical manner. This paper expressed the view that the problems of central city schools are unique and require different solutions. Joint occupancy is suggested as one solution to this problem. Schools sharing physical facilities with other users, such as offices and apartments, are described. (H. H. C.)

56 Knight, George A.
GUIDELINES FOR A CITY SCHOOL BUILDING PROGRAM
Gulf School Research Development Association
3801 Cullen Boulevard
Houston, Texas. 1966, 149 pp.

An effort to prepare detailed procedures applicable to the specific needs of the School Facilities Department of the Houston Independent School District whereby vital information may be acquired and disseminated to those responsible for making decisions. The publication is divided into five phases: (1) the preplanning phase, (2) the planning phase, (3) the bid and construction contract phase, (4) the construction phase, and (5) the acceptance phase. Several forms used in the business transactions are shown. Floor plans are included. (H. E. J.)

57 Koehler, C. L.
PROVISIONS FOR SPACE IN A MODERN SCHOOLHOUSE
1960 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 11 pp.

Summarizes the desirable characteristics in a modern school house. Areas discussed are (1) guidance, (2) health and physical education, (3) assembly areas, (4) food services, (5) student social centers, (6) administrative areas, (7) teacher-planning areas, and (8) school air conditioning. (H. H. C.)

58 Kyzar, Barney
A COMPARISON OF INSTRUCTIONAL PRACTICES IN CLASSROOMS OF DIFFERENT DESIGNS
University of Texas
Austin, Texas. April 1962, 286 pp. University Microfilms 62-541

Within the limitations of the classrooms studied,the following conclusions were made: (1) In five of the seven components of instruction observed, statistically significant differences were found favoring the "open-plan" design schools. These data are indicative of more desirable instructional practices. There is some question, however, as to the extent to which the building design was totally responsible for these differences. (2) The design of classrooms does not appear to affect the utilization of activities in the instructional program. In addition, to point up the similarity in the programs of the schools under investigation, these data might be indicative of current curriculum practices employed by most school systems that do not require spaces other than the classroom cell. (3) Classroom design in the schools studied did not appear to influence the utilization of classroom floor and display area. The evidence tends to indicate that the orientation of individual teachers bears a closer relationship to these considerations than do other factors. While the design of the classroom may be altered, there is little evidence to support the hypothesis that teachers will change their perceptions of space. On the contrary, while adjustments may be made, practices might not be changed significantly. (4) The transmission and effects of noise do not appear to be a problem in the schools investigated. The relatively low noise reduction qualities of the "open-plan" schools would indicate that noise might have been a problem. This, however, appears to be without substantiation. (5) The evidence tends to indicate that little use was made of corridor space for activities other than pupil passage, irrespective of classroom design. (T. E. J.)

59 Larson, Theodore
SCHOOL ENVIRONMENT RESEARCH AND EVALUATION OF WINDOWLESS CLASSROOMS
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 7 pp.

Various environmental relationships affect learning but a yardstick to indicate the comparative effectiveness of different school environments is needed. This paper presents a preliminary report on a case-study of two schools; one with windows, the other without. The effects on learning, if any, of windowless classrooms are being studied in order to compare the relationship of school fenestration with other environmental relationships so that a relative scale of environmental values in education may be obtained. (H. H. C.)

60 Leavitt, Urban J. D.
ELEMENTARY SCHOOL SIZE RELATIONSHIPS
University of Texas
Austin, Texas. June 1960, 353 pp.

The tentative criteria developed from standards and criteria approved by the jury in this study included criteria for the provision of administrative facilities, instructional and service facilities, space provision and size; criteria for provision of personnel; and criteria for this utilization of facilities, space, and personnel. The optimum elementary school size interval was defined as that size of elementary school enrollment which is most consistently associated with the best provision and utilization of facilities, space, and personnel. Within the limited sample of 17 elementary schools of different sizes there were certain school size intervals which, in terms of the criteria developed, could be identified as providing more of the essential facilities, space, and personnel and utilizing them more efficiently than other school size intervals. The results of this study indicated that optimum size elementary school intervals may lie within a range of 200 to 699 pupils. Schools within this range made provision of facilities, space, and personnel markedly superior to those of other schools among the 17 elementary schools surveyed. A smaller range of 200 to 399 pupils appeared to be associated with the best utilization of personnel. (T. E. J.)

61 Leggett, Stanton
SECONDARY SCHOOL FACILITY NEEDS
Building Research Institute
1725 DeSales St., N. W
Washington, D. C. 1962, 6 pp.

The need for school facilities on the secondary level is contingent upon the rate of population increase, population mobility, the degree to which high schools will continue to hold their enrollment, and the use of changing educational techniques, such as television. This paper considers these factors and presents census estimates for students enrolled in high schools through 1980. These range from a low of 14,752,000 to a high of 17,388,000, depending upon the future curve of birth rate. (H. H. C.)

62 LONG-RANGE PLANNING IN HIGHER EDUCATION
Western Interstate Commission for Higher Education
University East Campus
Boulder, Colorado 80304. April 1965, 128 pp.

The proceedings of the Sixth Annual Institute for College and University Administrators held in Berkeley, California July, 1964. Eight addresses by educators include the following subjects: (1) Design and Change in American Higher Education, (2) Planning in the College or University, (3) A Case Study in Institutional Planning, (4) The Institution and the System: Autonomy and Coordination, (5) Housing the Educational Program: The Physical Plant as Educational Environment, (6) Long-Range Financial Planning, (7) Systems Analysis in Planning, (8) Resources for Planning: A Resume. Selected references follow seven of the addresses. (P. J. O.)

63 MacConnell, James D.
THE QUEST FOR QUALITY
School Planning Laboratory
School of Education, Stanford University
Stanford, California. 1964, 20 pp.

The need for more school facilities is too often emphasized while the need for better facilities to meet good learning situations is more or less sidetracked. The School Planning Laboratory of Stanford University has produced a report, clothed in an attractive, "different type" format, describing certain approaches to better school planning. It claims that better schools can be obtained under present budgets than those that are being built. This can be done through school planning education, visitation to superior school plants, direct assistance from school-planning laboratories, and through a "systems" approach toward better schools. System construction is described in some detail. One of the outstanding services of the School Planning Laboratory is its visitation program. Visitors who have specific building problems are taken to school buildings where new innovations are visible in which they might be interested and which might help them solve their own problems. Other services correspond to those of its parent cooperator, the Educational Facilities Laboratories of New York under the Ford Foundation. (A. B. G.)

64 McGuffey, C. W., et al.
LONG-RANGE PLANNING FOR SEATTLE COMMUNITY COLLEGE
The Associated Consultants in Education, Inc.
Tallahassee, Florida. 1966, 192 pp.

This document projects a long-range plan for the overall development of Seattle's Community College program. The principal emphasis is the analysis of data and information pertinent to the determination of potential enrollments, the evaluation of existing facilities, the selection of needed sites for the college, and the projection of general facility requirements and their estimated costs. As the analysis of pertinent information is developed, enrollment projection techniques are explained, site selection criteria are outlined, techniques or program analysis are discussed and space projections are made. The results are specific recommendations for the physical development of Seattle's Community College System for a ten-year period. (C. W. M.)

65 McKeag, Francis B.
MOBILE CLASSROOMS FOR SCHOOL PLANT FLEXIBILITY
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 5 pp.

Population growth and mobility are of special significance to city schools. Since it takes up to two years to acquire a site and build a school, classroom units that can be moved from one place to another can be of great value. Chicago has experimented with such units providing 600 square feet of instructional area and costing under $10,000 per unit installed. This paper gives details. (H. H. C.)

66 McNicholas, John Joseph, Jr.
THE DEVELOPMENT OF EDUCATIONAL CRITERIA FOR NEW ELEMENTARY SCHOOLS IN CHICAGO
Michigan State University
East Lansing, Michigan. December 1961, 213 pp. University Microfilms 61-4971

An analysis of educational adequacy in 37 new elementary schools in Chicago. When the collection of these data was completed, demonstrable differences in unit costs among the buildings were noted. Significant variations in the total educational adequacy ratings of the various buildings were cited. The concensus reached by consultants to the study centered upon provision of fuller and more detailed educational specifications. These criteria should aid the district in enhancing the adequacy of school plants to be constructed, while controlling the cost in a more systematic, objective fashion. The development of recommended educational criteria for planning new elementary school buildings in Chicago ensued. (T. E. J.)

67 THE MEASURE OF A GOOD SCHOOL. A GUIDE TO EVALUATION OF SCHOOL SYSTEMS ADOPTED PARTICULARLY FOR USE IN KENTUCKY SCHOOLS
Bureau of School Service
College of Education
University of Kentucky
Lexington, Kentucky. 1964, 78 pp.

While much of this book has implications for school plant planning, only Section V (pp. 64-72) is specifically devoted to School Plant. A brief discussion of each of the following points is given: site and location, pupil dispersal, projecting enrollments, inventory of plant facilities, plant balance vs. capacity, calculating building capacities, projecting capital needs, and safety and health considerations. Forms are included for (1) projection of enrollment on the basis of grade-by-grade survival, (2) inventory of plant facilities, and (3) calculating pupil capacity of schools. (J. H. R.)

68 Metropolitan Area Planning Commission
EXISTING SCHOOL FACILITIES OF METROPOLITAN PULASKI COUNT, ARKANSAS, Report No. 1
Metropolitan Area Planning Commission
Pulaski County, Arkansas. 1957, 66 pp.

This study of school plant planning is the first of several to be made by the Metropolitan Planning Commission of Pulaski County, Arkansas. The study was funded jointly by the three school districts of the county and a planning assistance grant from the Urban Renewal Administration of the Housing and Home Finance Agency. The intent of the first report was to present the findings of an inventory of the existing school facilities of Pulaski County, Arkansas for grades 1-12 as of the date of publication, May 1957. The findings are analyzed, classified, and presented in graphic form. One of the major goals of the report was to secure county-wide adoption of area-wide standards for school building standards. Following the adoption of the area-wide school building standards, the data will be evaluated in the light of the standards. The evaluation of each building together with an analysis of school population trends within the county will be used to estimate the useful life of each existing school plant. Finally the report will recommend enlargement, modernization, or abandonment of each individual plant. Subsequent studies are to deal with (1) standards for school planning, including coordination of school and recreation facilities, (2) school population trends, (3) a school development plan for the metropolitan area, including an evaluation of existing facilities and a study of the need for new facilities and (4) a six-year capital outlay program for schools of the metropolitan area. (C. S. B.)

69 MINIMUM AREAS FOR SECONDARY SCHOOL BUILDING FACILITIES
Department of Public Instruction
Commonwealth of Pennsylvania
Harrisburg, Pennsylvania. 1966, 5 pp.

Classification of facilities according to instructional use and recommended space in terms of square feet per type of instruction. Facility topics include: (1) general classrooms, (2) special education, (3) science, (4) business, (5) arts and crafts, (6) homemaking, (7) industrial arts, etc. (H. H. C.)

70 Mississippi State Department of Education
LONG RANGE PLAN OF PROVIDING EQUAL FACILITIES FOR THE CHILDREN IN THE DISTRICT
State Department of Education
Jackson, Mississippi. 4 pp.

Form includes the following information areas: (1) name of school that will be operated in the district and grades to be taught and the average daily attendance, (2) list each existing school building that is to be used in the new program at each site and give the number of satisfactory classrooms in each building, (3) proposed construction (in order or priority), (4) list of satisfactory classrooms available when proposed plan has been completed, etc. (H. H. C.)

71 Moore, Frank C.
ECONOMY HANDBOOK - ECONOMIES FROM A TO Z IN PLANNING AND BUILDING SCHOOLS
Commission on School Buildings
New York State. November 1960, 107 pp.

A report of a study by the Temporary State Commission on School Buildings of the New York State Legislature. Includes recommendations for effecting economies in five categories: (1) Selecting the Architect, (2) Site Selection, (3) Educational and Architectural Planning, (4) Construction Details, and (5) Contracting the Work. Each category has subdivisions which are provided with checklists of suggestions appropriate to the activity or function under consideration. Photographs, diagrams, and floor plans are provided as explanatory material. Appendix I supplies an additional checklist for Heating and Ventilating and for Plumbing economies. Appendix II provides an additional checklist of economies which may be effected through deletions and postponements. No information is furnished regarding study design or data collection methods. (C. B.)

72 Morisseau, James J. and others
BRICKS AND MORTARBOARDS
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. May 1964, 168 pp.

A report on college planning and building which utilizes the voices of a large number of educators, architects, and persons of other interested occupations. Five professional writers toured the country and wrote chapters dealing with classrooms, laboratories, libraries, dormitories and college campuses. The book is intended to assist college trustees, corporation and foundation executives, lawmakers, and potential donors in making basic decisions affecting the future of American higher education. The vast scope of school building activity and of Federal Funds available to assist in the construction of school buildings are broadly stated. EFL included chapters on money and renovations. Numerous photographs and sketches are included; old problems are re-stated and re-charted to emphasize the lack of adequate accomplishment during past years and the need for new college buildings. Colleges and universities are being challenged with explosive growth, inevitable change, and complexity. Their response must be comprehensive planning, design for maximum convertibility, and full utilization of space, time, people, and things. (R. F. T.)

73 Murphy, Judith
MIDDLE SCHOOLS
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York 10022. 64 pp.

A report on the middle school defined as a school between two other schools which may house grades 7-8-9, 5-6-7-8, 5-6-7-8-9, 6-7-8-9, or just grades 7-8. Particular groupings are less important than the efforts to match institutions to the needs and potential of children from 10-14,or so. Reasons for differing middle schools in various communities stem from sociological problems as well as educational. This may include de facto segregation, financing, travel distance for young children, and belief in the efficiency of the 4-year high school for a more sustained and vigorous education program. The decisions as to form or organization will have to be made on practical grounds and on the basis of social and administrative viability. Any pattern is satisfactory that gives identity to youths during early adolescence, includes at least three grades for stability, and brackets those grades in which significant numbers of pupils reach pubescence. As examples of the variety of solutions, Part II analyzes six schools which depict different architectural and philosophical approaches to the problem. Part III of the report sets forth five intermediate schools, schools that share the middle school concept while adhering to more conventional grade organization. (J. H. H.)

74 NCSC GUIDE FOR PLANNING SCHOOL PLANTS
National Council on Schoolhouse Construction
Michigan State University
East Lansing, Michigan. 1964, 164 pp.

A guide consisting of five major sections, (1) Planning and Programming the Educational Plant, (2) Spaces and Equipment for Learning, (3) Noninstructional

Plant Facilities, (4) Balanced Conditioning of Spaces, and (5) Principles of Economy and Planning Resources. It is oriented toward the identification of planning principles rather than detailed instructions. The importance of planning and research is emphasized throughout. Planning roles and techniques are identified and described. Special attention is given to the sonic, thermal, and visual environments and to spatial, aesthetic, and safety factors. Consideration is given to (1) the site, (2) instructional spaces, both general purpose and specialized in nature, (3) spaces which serve functions auxiliary to the direct instructional process, and (4) noninstructional facilities and systems. An unusual feature is a section concerning available educational plant planning resources. (C. S. B.)

75 NEW DIMENSIONS IN JUNIOR COLLEGE PLANNING
School Planning Laboratory, School of Education
Stanford University
Stanford, California. December 1958, 111 pp.

Results of School Planning Laboratory institute during 1958, in which the planning of junior colleges was the central problem. Part one, "New Dimensions in Purpose," discusses the following topics: (1) the unique role of the community junior college, (2) providing facilities for optimum service, (3) junior college education problems, and (4) junior college education potentialities. Part two, "Dimensions in Planning," includes: (1) Florida prepares for tomorrow, (2) coordinating function of the superintendent in planning, (3) planning community junior colleges, and (4) space adequacy procedure for creative college planning. Part three, "New Dimensions in Application," includes: (1) creative planning of the student center, (2) creative planning for administrative and student personnel, (3) versatile facilities for technology, and (4) science: experiences of industry. Part four, "New Dimensions in Coordination," includes: (1) cooperative planning of education specifications, (2) effective use of citizens committees, and (3) the role of the architect. (H. H. C.)

76 NEW MEXICO SCHOOL BUILDING GUIDE
New Mexico Department of Education
Santa Fe, New Mexico. 1965, 32 pp.

Reports on recommendations for desirable standards and provisions, and cites basic requirements for safe and stable design and use of materials in New Mexico school buildings. Scope of the guide applies to all new structures and additions used for school purposes and owned by school districts in the State of New Mexico. Recommendations are made in the following areas: (1) administration, (2) sites, (3) general construction, (4) elementary schools, and (5) secondary schools. (H. H. C.)

77 Obata, Gyo and others
COMPREHENSIVE CAMPUS PLANNING
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 27 pp.

The case histories of four colleges and a system of public school are considered from the point of view of comprehensive campus planning. Although the principles of campus planning are basically the same in any situation, their application may vary with different types of institutions. Included in the following detailed case studies of design in relation to long-range planning are two new, commuting type state colleges; a small, private, church-related institution; a large well-established state university; and a county school system. (H. H. C.)

78 Pena, William
CAMPUS PLANNING STUDY FOR THE OHIO STATE UNIVERSITY
Alternate Basic Schemes
Caudill, Rowlett and Scott
3636 Richmond Avenue
Houston, Texas. August 1959, 142 pp.

As indicated in its foreword, this preliminary report is intended to identify the planning problems of The Ohio State University and to point out possible solutions in order that basic policies which relate to the development of the campus might be established. The study involves an examination of future enrollment and space needs, of various types of program organization, of traffic and urban development problems involving the university and adjoining areas, and an analysis of the present campus in respect to existing buildings, physical barriers, and aesthetic considerations. On this background seven schemes are derived from two basic concepts of campus planning: centralization and decentralization. These seven schemes are then evaluated in terms of advantages and disadvantages. It is pointed out in conclusion that a decision in respect to these schemes cannot be made until the University formulates firm statements of policy in several areas. Generous use is made of diagrams and sketch plans to illustrate situations and proposals. (C. A.)

79 Pennsylvania Department of Public Instruction
CHECK LIST FOR ELEMENTARY SCHOOL PLANNING
Bureau of Building Construction and Transportation
Harrisburg, Pennsylvania. 1964, 9 pp.

Checklist provides for analysis of suggested practices and procedures for elementary school planning within the following areas: (1) preplanning, (2) preliminary plans, (3) final plans, (4) health suite, (5) toilet facilities, (6) storage and service areas, etc. (H. H. C.)

80 Pennsylvania Department of Public Instruction
THE SCHOOL PLANT GUIDE FOR PLANNING SCHOOL PLANTS
IN PENNSYLVANIA
Commonwealth of Pennsylvania
Harrisburg, Pennsylvania. 1966, 21 pp.

Outlines minimum standards for new building, alterations, and additions with reference to the following: (1) spatial environmental factors, (2) visual environmental factors, (3) sonic environmental factors, (4) thermal environmental factors, and (5) safety environmental factors. Specifications include an analysis by grade levels and general usage. (H. H. C.)

81 Perry, C. L.
SCHOOL SITE SELECTION
1956 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 6 pp.

Report on practices used in Caddo Parish, Louisiana. Areas covered include: (1) enrollment data and projection, (2) determination of site location and conditions determining location, (3) negotiations for site purchase, and (4) publicity on site location. (H. H. C.)

82 PLANNING A SCHOOL PLANT--THE EDUCATIONAL SPECIFICATIONS
Utah State Department of Public Instruction
223 State Capitol
Salt Lake City, Utah. 9 pp.

An outline of the planning phase of school building, as one of the three phases involved--planning, designing, and construction. Educational specifications are defined as the written expression of the results of the planning phase. The nature of the document makes it the logical responsibility of educators to formulate it. Vision of the team relationship between educators and architects is necessary. All the educational requirements which the school facilities must meet, all the values which must be achieved must be identified and described in communicable language in the educational specifications. A suggested list and description of the kind of items involved in educational specifications are given under two headings, General Information and Detailed Descriptions of the Various Spaces. Under the heading, Organization and Procedures, five key points are set out: (1) the vital need for the planning team concept, (2) the importance of arranging for the help of competent professional consultants, (3) the use of the problem-solving approach, (4) the importance of allowing enough time for the work, and (5) the provision of an adequate budget for planning. (S. A. M.)

83 PLANNING THE SECONDARY SCHOOL PLANT
Utah State Board of Education
223 State Capitol
Salt Lake City, Utah 84114. 94 pp.

Presents procedures for planning secondary school plants beginning with the needs of adolescents and progresses to the development of the school building spaces needed to house an educational program designed to meet these needs. Special attention is given to the Utah program of studies for junior and senior high schools, long range planning, site problems, space organization, and environmental controls. The building spaces designed to accommodate the different subjects are discussed with attention being given to size, location, function, furniture, and equipment. Building spaces discussed include offices, the administrative suite, and facilities for the faculty, guidance, student activities, and custodial use. Such instructional spaces as classrooms, science rooms, industrial art shops, vocational agriculture shops, physical education facilities, the library, the auditorium, connecting spaces, and student commons are described in detail. (E. J. M.)

84 PRELIMINARY GUIDE FOR PLANNING A SECONDARY SCHOOL BUILDING PROGRAM
Texas Education Agency
Capitol Station
201 E. 11th St.
Austin, Texas. September 1964, 29 pp.

Outlines the steps necessary to carry out a school building program. Educational specifications should include a detailed description of (1) all the activities that will take place in the buildings; (2) the curriculum to be provided for; (3) specific architectural characteristics desired; (4) the facilities needed, equipment required, and space relationship of these to other facilities; and (5) budget and other governing factors. Lists the responsibilities of those involved in developing educational specifications and gives educational specifications for each unit of the school plant. (H. E. J.)

85 PREPLANNING OF SCHOOL PLANT FACILITIES
Texas Education Agency
Capitol Station
201 E. 11th St.
Austin, Texas. September 1965, 26 pp.

The role of the lay citizen committees can be a very helpful source in helping to identify the needs of both the children and the community. Methods of making school plant and community surveys are explained. Contains an outline for developing educational programs into education specifications and lists the responsibility of all the persons involved in developing educational specifications. Offers a checklist of suggested steps to be followed while conducting a building program. (H. E. J.)

86 Proceedings of the Washington State School Building Conference
EFFECTIVE HIGH SCHOOL BUILDINGS FOR EFFECTIVE HIGH SCHOOL EDUCATION
State Superintendent of Public Instruction
Olympia, Washington. December 1951, 32 pp.

The proceedings of the Washington State School Building Conference which had as its theme "Economy in Construction of High School Buildings." This conference was held on December 12-14, 1951 and was sponsored by Pearl A. Wanamaker, State Superintendent of Public Instruction. The discussions were centered about two main principles:

1. Helping people get together to study what education means in a democracy as a basis for planning school buildings.
2. Planning classrooms in the light of learning activities that should take place in today's schools.

Reports by nationally recognized authorities included "The Developing Secondary School Program," "Developing Designs for Secondary School Buildings," "Critical Construction Materials," and "Translating Educational Specifications into a Creatively Designed School Building." Summaries of panel discusssions are included for such topics as "What Learning Experiences Help Young People Become Effective Citizens?" "Cooperative Educational Planning," and "How Do We Get Economy In Construction?" (E. J. M.)

87 Radoslovich, Michael L.
INCORPORATING EDUCATIONAL FACILITIES IN BUILDINGS WITH OTHER OCCUPANCY
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 5 pp.

It is no longer practical to place an urban school alone on isolated lots, thereby violating the principles of economy and city planning. This paper reports on two possible alternatives to traditional school construction; the combination of a kindergarten-elementary school with a housing project and a combination business education high school and office building. (H. H. C.)

88 REFERENCES ON PLANNING SCHOOL BUILDINGS
National Education Association of the United States, Research Division
Washington, D. C. January 1965, 5 pp.

A listing of 65 books and pamphlets that are related to planning school buildings. Includes publishing houses, addresses, and costs. (H. H. C.)

89 REGIONAL SCHOOL DISTRICT BUILDING NEEDS CONFERENCE AGENDA
School Building Assistance Commission
Boston, Massachusetts. September 1959, 1 p.

Criteria include checklist for the following: (1) pertinent surveys and reports, (2) enrollment to be housed, including grade-by-grade breakdown for those grades included in the district, (3) selection of site, (4) selection of treasurer, (6) selection of counsel, etc. (H. H. C.)

90 Reida, G. W.
A MANUAL FOR EVALUATING SCHOOL FACILITIES
Kansas State Department of Public Instruction
Topeka, Kansas. 1962, 73 pp.

A booklet designed to provide a structure that can be used in the evaluation or rating of a school building. It includes a checklist and a mathematical system for quantifying the ratings and is designed to be used by lay persons as well as informed professionals. The rating scales which are in the form of questions to be answered, cover both elementary and secondary building educational specifications. In addition, consideration is given to heating, ventilating, lighting, fire protection, and sanitary facilities. The pamphlet is in experimental form to be revised and reprinted. (R. L. F.)

91 Richardson, L. S. and Caudill, William W.
TOWARDS AN ECONOMICAL FLEXIBILITY Research Report No. 3
American School and University
737 3rd Ave.
New York, New York. 1954-55

A & M Consolidated Schools, College Station, Texas, obtained an economical flexibility in the design of a high school by (1) arranging space for an increasing enrollment, and (2) by providing space to house any type of curriculum. A floor plan showing the three-level building--top level for classroom wing; lower level contains the administration unit--is included. Flexibility is defined by breaking it down into three separate words--expandability, convertibility, and versatility. In planning for expandability, a master plan was developed to allow the community school to grow effectively and economically and to unify the variety of architecture. In planning for convertibility, needed because of changing curriculums and teaching methods, it was decided that the school would not be designed for any fixed operation. In planning for versatility, movable panels were used to subdivide the building. The school auditorium, in the shape of a domed circular building, used folding partitions to achieve convertibility and versatility. Numerous comparative diagrams are included in the report. (M. W. B.)

92 Riker, Harold C. and Lopez, Frank G.
COLLEGE STUDENTS LIVE HERE
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. 1961, 152 pp.

Guidelines for obtaining buildings and spaces for college people. Emphasis is placed on dormitories and residence spaces for single students, married students, and faculty members. Many sketches of housing projects are included and explained, none of which meet all the guidelines, but each is noted for its attack on a specific problem at a given time. Many innovations are cited which seem to meet the ever-changing demands of college students and curriculum in the variety of large, small, private, and public colleges of today. The cases described are examples which might serve as the basis for better housing on other college campuses. Housing is defined as anywhere students and faculty members might live: dormitories, residence halls, sororities, fraternities, apartments, cooperative houses, rooms in private houses, or in private residences. Housing must also deal with the relationship of college people to college facilities including not only buildings but furnishings, roads, walks, parking spaces, recreation areas and landscaping. College Students Live Here stresses particularly the development of an exact and specific set of requirements for residence buildings to include type, size, dimension, color, finish, equipment,and also outdoor spaces, air flow, lighting, acoustics, temperature, all in relation to the students. (A. B. G.)

93 Roaden, Ova Paul
THE ESSENTIAL ELEMENTS OF EDUCATIONAL SPECIFICATIONS
FOR SCHOOL PLANT FACILITIES
University of Tennessee
Knoxville, Tennessee. August 1963, 170 pp. University Microfilms 63-5924

The conclusions drawn from this investigation are summarized as follows: (1) Written education specifications are vital to planners of school plant facilities. (2) The use of written educational specifications in school plant planning has increased in recent years, but is not yet widespread. (3) The main purpose of educational specifications is to serve as a guide to the architect in planning school plant facilities. (4) There are incidental purposes of educational specifications. Among these are the following: (a) to stimulate curriculum improvement, (b) to define existing educational programs and identify desirable future programs, (c) to give written expression of community values and educational philosophy, (d) to express the hopes and desires of the community for the future of its youth, (e) to serve as a basis for inservice training of teaching personnel, and (f) to serve as a basic reference to the operation and functions of the resulting educational facilities. (5) Educational specifications may be evaluated on the basis of the principles of school plant planning developed during this investigation. (6) There are 17 elements listed as essential to educational specifications. (T. E. J.)

94 SAGINAW TOWNSHIP: SAGINAW, MICHIGAN SCHOOL SITE STUDY
Caudill, Rowlett and Scott, Architects
3636 Richmond Avenue
Houston, Texas. August 1959, 55 pp.

A study reviewing the problem of determining the need for future school sites according to projected enrollments through 1980. Survey study attempts to determine the following factors: (1) number of students presently enrolled; (2) how students are grouped within residential areas; and (3) how students are grouped within schools. Total population trends, school census, public school enrollment, and grouping number trends are charted. (H. H. C.)

95 Sanborn, George E. and others
SCHOOL BUILDING PROJECT PROCEDURES, A Guide for the School Building Committee, Economy Series, No. 1
State Department of Education
Hartford, Connecticut. June 1960, 44 pp.

In 1959 the Connecticut General Assembly passed legislation requiring "that the State Department of Education establish a School Construction Service to assist communities in achieving increased economy in their school building projects. It further requires that "each project be reviewed by the Service for economy in order to qualify for state construction grant." This first booklet recommends procedures designed to eliminate "wasted effort, lost time, and the resultant, hidden but considerable cost." It is a must in procedures which communities should follow if they wish to obtain financial assistance under the Connecticut school building aid law. Chapters on School Building Committee, Allocation of Responsibilities, Educational Specifications Reconsidered, Selecting an Architect, Time for Planning, Budgeting and Cost Control, Contract Documents, Bidding and Contracting, and Construction Period are short, concise, and useful to any groups and officials planning school facilities. The other four chapters are apropos only to Connecticut and other state grants, laws, and regulations. (A. B. G.)

96 Schneider, Raymond C.
SPACE FOR TEACHERS
Educational Facilities Laboratories
477 Madison Avenue
New York, New York. 21 pp.

Identification of the problems which exist today and how educational facility planners are overcoming them. Discusses the many kinds of spaces that should be planned for different activities. Diagrams of several schools which make effective use of space are shown. (H. E. J.)

97 SCHOOL PLANNING MANUAL BIBLIOGRAPHY
School Planning Service Vol. 34, No. 3
Commonwealth of Virginia
Richmond, Virginia. October 1959, 3 pp.

SCHOOL PLANNING MANUAL BIBLIOGRAPHY includes lists from State Board of Education, Richmond, Virginia; Office of Education, Department of Health, Education, and Welfare, Washington, D. C.; United States Department of Agriculture; Department of Education, Minnesota; Illuminating Egineering Society, New York; and periodicals from several commercial professional publications. (H. H. C.)

98 Shapiro, David F.
RELATIONSHIP OF HIGH SCHOOL SIZE TO STAFF RELATIONS
Stanford University
Stanford, California. 1957.

The data warrant the following conclusions: (1) Communications were better provided for in larger schools than in the smaller schools. (2) Communication was more active in smaller schools than in the larger schools. (3) Group cooperation was in greater evidence in the smaller sized schools. (4) The optimum size school for staff relations is one with an enrollment between 1,200 and 1,600. (P. J. O.)

99 Shilowitz, Stephen
ECONOMIC EVALUATION OF A COMBINED SCHOOL, APARTMENT BUILDING, AND MEDICAL CENTER
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 5 pp.

The City and Country School in New York City is engaged in a building program which centers about the most complete development of its site possible, in order to obtain income. The site is an 18,000 square foot lot in downtown New York City. After a thorough analysis of zoning laws and community needs, the decision was made to erect a combination school, apartment building, and medical center. Details of the planning are given, and the project's financial feasibility is assessed. (H. H. C.)

100 Smith, Clifford Basil
A STUDY OF THE OPTIMUM SIZE OF SECONDARY SCHOOLS
Ohio State University
Columbus, Ohio. February 1961, 172 pp. University Microfilms

Specific factors utilized in this study are as follows: Cost Factors: Cost per pupil for professional staff salaries; Cost per pupil for administrative and special service personnel; Cost per pupil per unit of educational opportunity. Pupil Factors: Pupil-teacher ratio; Pupil course load; Pupils suspended from school; Pupils considered to be troublemakers. Teacher Factors: Teachers with professional and permanent certification; Temporary certified teachers; Teachers with a Master's degree or beyond; Teaching experience; Teaching turnover. Administrator Factors: Semester hours in education; Principals with a Master's degree or beyond; Years in the present school; Years of professional experience. Institutional Factors: Breadth of educational opportunity; Teaching aids available; Administrative and special service personnel available; Pupil use of the library; Teacher salaries. The findings of the study indicate that when all factors are considered, 800 to 1,200 is the size range at which favorable factors approach the minimum. The data also show that schools of fewer than 200-400 pupils are paying a premium for an inferior program. However, the cost and program advantages of a majority of the factors increase as school size increases to the 800-1,200 size range, after which little, if anything, is gained and disadvantages on most factors begin to appear. Therefore, it is concluded that the optimal size range for three- and four-year secondary schools in Ohio is from 800 to 1,200 pupils. (T. E. J.)

101 Snapp, E. A.
PROBLEMS OF RECREATIONAL FACILITIES
Proceedings of the School Facilities Conference
University of Houston
Houston, Texas 77004. March 1961, pp. 85-87.

The following major indicators were utilized in this study: cost, institutional, principal, program, pupil, and teacher indicators. The principal findings from the study were summarized as follows: (1) In general, the total of all cost indicators decreased as school size increases. (2) The advantages shown by institutional indicators were greatest in the 300-to 499-pupil range. (3) The advantages shown by all principal indicators increased as school size increased. (4) The advantages shown by program indicators increased as school size increased in the 0- to 499-pupil range. In schools of 500 to 899 pupils, a decrease in advantages was noted as school population increased. (5) The advantages shown by pupil indicators increased in the 0- to 399-pupil range and then leveled off in the 400- to 899-pupil range. (6) In general, the advantages shown by teacher indicators increased as school size increased in the 0- to 499-pupil size category. The peak of advantages of teacher indicators occurred in the 300- to 499-pupil range. A decrease in advantages occurred in schools in the 500- to 799-pupil range followed by an upward turn in school of 800 pupils or more. (7) An increase in advantages shown by all indicators except those of cost occurred as school size increased in the 0- to 499-pupil range. A decrease in advantages occurred in schools in the 500- to 799-pupil range. An upward turn in advantages occurred in schools of 800 or more pupils, but these advantages did not approximate those evidenced in the 300- to 499-pupil range. The findings of the study indicated that when all indicators are considered, the 300- to 499-pupil range was the size category in which the favorable indicators approached the minimum. (T. E. J.)

102 SOME THINGS TO DO WHEN PLANNING A SCHOOL
Texas Education Agency
Capitol Station
201 E. 11th St.
Austin, Texas. November 1963, 41 pp.

Presents a procedure for planning school plant programs. Determining needs and educational specifications should be the first steps. Offers an information form for selection of an architect, a school plant evaluation checklist, a school plant survey form, an enrollment projection form, a scholastic census table, and inventory tables. An excellent source on bids, bonds, warrants, and insurance. Gives information on school plant maintenance and operations. (H. E. J.)

103 Southern Section Building Committee
GUIDE FOR EVALUATION OF SCHOOL FACILITIES
California Association of Public School Business Officials
Anaheim, California. April 1966, 59 pp.

Information --- to be used to eliminate unsatisfactory building features and stimulate improvements in future school facilities. After a brief explanation of the use of the guide and a sample of the summary evaluation form, the document launches into a separate section on each of ten "School Facilities Design Factors." These factors are: site, spatial, visual, thermal, sonic, aesthetics, audio-visual, equipment, safety, and maintenance. Each factor is treated under the same format which contains a brief descriptive paragraph, a set of questions relative to specialized aspects of the factor, and an evaluation profile form. The profile forms are made up on concentric circles forming a bull's-eye pattern. The specialized aspects of the factor are represented by radial lines. A perfect score is placed on the fifth circle. Thus, the evaluator develops a circular profile for each factor. An average score is also obtained which, in turn, is recorded on the summary form to produce an overall profile for the facility. Some of the evaluative criteria are technical in nature and may require special knowledge to handle adequately. By following the well written descriptions in these areas, however, one should be able to do an acceptable job. The final section of the guide contains a series of questionnaires to be submitted to such groups as teachers, principals, students, and district administrators. These questionnaires supplement data gathered on sonic, thermal, and visual factors. (G. R. R.)

104 Stanford University, Fifteenth Annual School Planning Institute
PLANNING FOR ELEMENTARY SCHOOLS
School Planning Laboratory
Stanford University
Stanford, California. 1965, 18pp.

Resumes of major speeches given at the Annual School Planning Institute. It includes presentations by Dr. Harold Gores of the Educational Facilities Laboratory; Dr. Fannie Shaftel of Stanford University; Dr. G. Wesley Sowards of Stanford University; Dr. Paul Avery, Superintendent, Winnetka, Illinois; Mr. A. Maurice Capson, Granite School District, Utah; Leland B. Newcomer, Clark County Nevada; Charles D. Gibson, California Bureau of School Planning, Sacramento; Roy H. Seifert, Landscape Architect, San Diego; John Shaver, Architect, Salina, Kansas; Ezra Ehrenkrantz, SCSD Project Architect, Stanford University; Clair Eatough, Senior Architect, California Bureau of School Planning, Sacramento. Each speaker relates the responsibilities of his field to elementary school planning. The content included discussions on team teaching, individualized instruction, independent learning, flexibility, changing pattern of population prediction, reorganization of school districts, a new educational dimension, and team approach to school planning, all in relation to school facilities problems. (R. L. F.)

105 Strevell, W. H. and Mahoney, Leo G.
SCHOOL POPULATION STUDY, Clear Creek Independent School District
Gulf School Research Development Association
3801 Cullen Boulevard
Houston 4, Texas. 1961, 44 pp.

Utilizing recognized criteria and statistical evidence, the authors indicate how they would spell out the needs for a school district when population trends, housing, and commercial forces are all involved in a particular school district. Of significance is a series of pertinent points used in establishing population tables and these are valuable to anyone interested in population studies. Yield per home and scholastics per school in a definite area are related. A survival or "retention-ratio" technique of statistical projection is applied to take into account external and internal factors. With these techniques of school population analysis a district may anticipate realistically both the future school population and the future needs of its community. (T. S. G.)

106 A STUDY OF STUDYING
School Planning Laboratory, School of Education
Stanford University
Stanford, California. 55 pp.

Determination factors in the study environment most important to students and what they consider to be ideal study spaces. Over 700 students at six California community colleges representing a wide range of characteristics found among junior college students were involved in the study. Section I of this report concerns responses given by 600 students from five junior colleges to 100 questions concerning study facilities. Section II compares the study habits of this group with those of a different group of more than 100 junior college students who kep detailed records of their actual study practices. Section III gives suggestions for designing and locating student study facilities based upon the data gathered in these two studies and the work on the part of the staff of the community college planning center. Conclusions are: (1) There should be a variety in the types and placement of study spaces. (2) Study areas should be restricted to studying and exclude socializing, eating, and relaxing. (3) Students want to study near instructors in their major field and near the special equipment used in that field. This suggests a distribution of study spaces rather than a concentration in a single facility such as the library. (4) Students appear to strongly favor a study area free of all extraneous noise. (5) Most students who had used both carrels and traditional study facilities were highly in favor of the carrels. (F. E. I.)

107 SUGGESTED OUTLINE FOR EDUCATIONAL SPECIFICATIONS
Connecticut State Department of Education
Hartford, Connecticut. 1962, 19 pp.

Brochure designed to assist superintendents and others concerned with the functional planning of school plants. It indicates, in outline form, those elements which must be considered in drafting the essential needs or any given educational program. The document which can ultimately evolve from this outline indicates how the structure and related facilities will be used. The educational specifications for both instructional and noninstructional areas are discussed in detail. Information on the site and site development is included. (H. E. J.)

108 Swanson, J. Chester
HERE'S WHAT THE NEW DEMAND FOR VOCATIONAL EDUCATION MEAN FOR SCHOOLMEN
The Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. 1963, 2 pp.

This article defines four needs in the area of vocational education: (1) recognition of the need for vocational education on the part of school administrators, (2) extension of vocational education into more schools, for more occupations, and into post high school programs, (3) reorganization of traditional occupational categories into broader areas of service, and (4) federal support of a major share of employment training. (A. C. G.)

109 Templeton, Arthur
WHAT THE SCHOOL BUSINESS OFFICIALS MUST KNOW ABOUT CHANGES IN EDUCATION TO BUILD GOOD SCHOOLS
1960 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 9 pp.

Summary of increased emphasis given to changes in secondary. school buildings. Variety of methods of instruction, class sizes, and means of communication has its affects in terms of school space, design, and construction. Discusses large group instruction, team teaching, educational TV, materials centers, central kitchens, decentralized feeding, language laboratories, and the 'little school' plan. Reference is made to a school plan for the city of Des Moines, Iowa. (H. H. C.)

110 TO ADD OR NOT TO ADD?
School Building Assistance Commission
Boston, Massachusetts. October 1956, 2 pp.

A systematic abbreviated guide for determining whether or not to add to present school buildings. Criteria topics include: (1) Is the site adequate? (2) Is the building structurally sound? (3) Is the building educationally sound? (4) Is the cost of adding reasonable? and (5) Is the proposed addition part of a long-range plan? (H. H. C.)

111 TOWARD BETTER SCHOOLS
Commission on School Buildings
New York State. 1952, 40 pp.

Commission created by New York State in 1950 to study state school system with particular emphasis on building shortages, modernization, ability of local unit to finance buildings for contemplated increase in school population--to make recommendations relative to the same. Publication identifies reasons for New York City's chaotic school building situation in early 1950's. Outlines methods of determining needs. Outlines building standards, priorities. Compares costs of school architect with independent architects. Recommended (accepted) change in debt limitations, school lighting code, and districts with non-operating schools (contract districts). Treats problems of pupil projections and sustaining school population. Furnished checklist for standards in existing buildings. (C. H.)

112 University of New Mexico
College of Education
EDUCATION SPECIFICATIONS FOR ST. MICHAEL'S SCHOOL, SANTA FE, NEW MEXICO
University of New Mexico
Santa Fe, New Mexico. 92 pp.

Reports on a detailed study of the Santa Fe Community, including the philosophy, administration, guidance, library, cafeteria, and curriculum areas of the St. Michael School, New Mexico. Educational specifications and recommendations are made in the following areas: (1) administration, (2) guidance and counseling, (3) library, (4) cafeteria, (5) social studies, (6) science and math facilities, (7) industrial arts, (8) business administration, (9) physical education facilities, (10) language arts, (11) foreign languages, (12) fine arts, (13) junior high school, and (14) non-instructional facilities. (H. H. C.)

113 UNIVERSITY RESEARCH BUILDINGS FOR SHORT-TERM GRANT PROGRAMS
University of Wisconsin
Madison 6, Wisconsin. 1964, 25 pp.

A monograph with three main purposes: (1) focus attention on the problem of providing space for short-term grant programsm; (2) provide a tool which institutions may use to assist in the procurement of research grant support funds; (3) point out the variety of problems involved in space procurement for short-term programs. The University of Illinois approach to the problem was used as a case study. The major categories of concern in providing space for short-term programs are: alternative solutions to space problems; the method of overall administrative control; physical characteristics of the space, site location, and alternative building types. Alternatives appear to be: utilization of, addition to, purchase of, or leasing of existing space; construction of new space; a combination of alternatives. There are three basic schemes for controlling university research facilities. They are: (1) a university-wide research center; (2) a college or divisional center; (3) a departmental center. The more centralized the center the more efficient is space utilization; however, centralized facilities necessarily remove researchers from areas where they teach. Decentralized facilities do allow teaching and research activities to operate in close proximity; however, flexible use of research facilities is hampered. Physical facilities for short-term programs should be economical, flexible, expandable, expendable, in close proximity to related disciplines, in conformance with overall campus planning, and esthetically acceptable. A basic structural unit appears to be most advantageous from the standpoint of flexibility, economy, and expandability. The University of Illinois constructed a prototype building for peripheral sites. (R. L. H.)

114 Van Hoose, Richard and others
MANUAL FOR CONSTRUCTION OF JUNIOR AND SENIOR HIGH SCHOOLS
Jefferson County Public Schools
Louisville, Kentucky. November 1964, 130 pp.

A basic guide for the planning and construction of junior and senior high school buildings in Jefferson County, Kentucky. Advanced planning committees composed of teachers from the school system were responsible for planning the instructional areas of the schools. A committee of principals, assistant principals, and counselors planned the administration areas of the high schools. The manual is a product of cooperative planning with teachers, supervisors, administrators, architects, and technical experts. The Manual consists largely of a list of facilities needed in junior and senior high schools and a specific description of the dimensions and relationships of these to each other. A statement of instructions to architects is included. (C. W. M.)

115 Wattenbarger, James L.
EMERGING EDUCATION PROGRAMS IN THE JUNIOR COLLEGE
Proceedings of the NCSC Thirty-Eighth Annual Meeting
University of Houston
Houston, Texas. October 1961, pp 73-82.

The junior college of today, prospective enrollments and programs, and implications for building design. Community junior colleges will occur when the state concludes it will provide post high school education that will meet the needs of ALL its citizens within commuting distance. Community college programs should include pre-college courses, terminal courses, courses that will meet the employment needs of the community, on technical, subprofessional, and semiprofessional bases: courses for adults, courses for high school graduates and drop-outs, vocational training courses, retraining courses, health courses, and courses in the training of the proper use of leisure time. This diversity of courses will demand: libraries, large and small classrooms, laboratories of several types, electronic devices and audio visual machinery, counseling rooms, ample parking areas, air conditioning for year-round use, storage spaces, eating places, physical development areas, social spots--all these are but a few of the considerations to be given to the "new" community college. (A. B. G.)

116 Weinstock, Ruth
SPACE AND DOLLARS: AN URBAN UNIVERSITY EXPANDS
Educational Facilities Laboratories, Inc.
New York, New York. 36 pp.

A case study of Drexel Institute of Technology, a university of an enrollment of 8,000 students located in downtown Philadelphia faced with a need for expanding its facilities. The study was directed toward six areas of inquiry: (1) the economics of the high rise building, (2) the economics of constructing low building units which can be vertically expanded at a later date, (3) the conversion of industrial buildings to educational use, (4) the parking problem, (5) the arrangement and use of space to achieve high utilization, and (6) the determination of future space requirements. Conclusions from the six areas of inquiry are: (1) educational buildings, higher than walk-up distance, are practical; (2) the need for higher buildings determined by the cost or availability of land as compared to the cost of the vertical transportation facility; (3) long range economics can be affected by planning columns and column footings to receive additional floors at a later date; (4) savings in cost and time could be made through the conversion of an industrial building; (5) when cost of land is near $5.00 per square foot, a multiple-story, open-air parking garage should be considered, and; (6) a highly significant factor in the ability to provide a good a good education at a relatively low cost is the compactness of the teaching facilities which made possible a high utilization of rooms. (E. J. M.)

117 Wolfer, Wilfred C.
EDUCATIONAL AND BIDDING SPECIFICATIONS
Proceedings Forty-fourth Annual Convention
Association of School Business Officials of the United States
and Canada
2424 West Lawrence Avenue
Chicago, Illinois. 1958, 6 pp.

Reports on two areas: (1) the need for community groups and individuals, including pupils, parents, teachers, supervisors and other administrative personnel to participate in the formulation and planning of education specifications; and (2) the three types of building specifications commonly used while working with the architect and contractor. The characteristics of the Open-specification, Bidder's Choice, and the Base Bid Specification are explained. (H. H. C.)

118 Yulo, Frank Ralph
GENERAL FACTORS RELATED TO THE EDUCATIONAL SPECIFICATIONS FOR THE PHYSICAL FACILITIES IN THE SMALL TWELVE-YEAR SCHOOLS
Columbia University
New York, New York. 1963, 132 pp.
University Microfilms 63-2302

The major areas of concern pertinent to small school plant planning according to this study included: (1) Facilities should serve a basic small group of one to six pupils, and provide for the coordination of such groups, rather than the traditional 25 to 35 pupils. (2) Facilities must provide for kindergarten through twelfth grade, in one building which facilitates and enhances the articulation of learning activities and professional relationships throughout all age levels, including adult education. (3) K-12 buildings must have open areas in which space dividers can provide flexible learning areas, for two or more teachers, each working with two ore more groups concurrently, instead of the rigid partitions now found in school buildings. (4) Facilities should provide for mobility of most equipment, storage cases, and space dividers to achieve optimum allocation and use of space and equipment, and to permit flexibility of schedule. This implies more storage space, less space for halls and walls, and no stairways. (5) Space, furniture, and equipment should be so planned and designed that the building functions more like the home, which informally serves small groups, than the factory, which is specialized and highly organized for mass action. (T. E. J.)

II. ARCHITECTURAL SERVICES

119 Caudill, William W. and Bullock, Thomas A.
BARRIERS AND BREAKTHROUGHS - Research Report 9
American School and University. 1956-57.
737 3rd Ave.
New York, New York. 1956-57.

An evaluation of school architecture as we see it today focusing on the twin problems: what has been done to give our children better school buildings? What is yet to be done? Some of the greatest barriers to obtaining better schools are described in short paragraphs: (1) architectural prejudice; (2) educational prejudice; (3) obsolete codes; (4) sound technology; (5) structural techniques; (6) building complexity; (7) small building units; (8) inadequate building units; (9) static thinking; (10) unit cost bugaboo. There are a great number of breakthroughs to offset the barriers described in brief paragraphs: (1) group dynamics of planning; (2) educational research approach; (3) plan types; (4) learning walls; (5) outdoor learning; (6) teaching space dividers; (7) student centers; (8) low ceilings; (9) renaissance of top lighting; (10) landscaping; (11) movable equipment; (12) humanistic architecture. (M. W. B.)

120 Fortune, William Martin
A STUDY OF THREE ELEMENTARY SCHOOLS CONSTRUCTED FROM A SINGLE
MODIFIABLE PLAN IN THE EDMONDS, WASHINGTON SCHOOL DISTRICT
University of Washington
Seattle, Washington. 1965, 154 pp.

This thesis was a report of a controlled experiment, set up by the State Board of Education, to test the feasibility of the use of stock or modifiable stock plans in the construction of school facilities. The test involved three elementary schools in the Edmonds, Washington, School District. The only savings reported were in architectural services but these were offset by adaptations to the various sites. Stock plans tended to nullify competitive bidding by giving an advantage to the first successful bidder who had constructed forms for pouring concrete in Hyperbolic Paraboloid roofs. Based on this study, it would appear that a stock plan or modifiable stock plan should be one which is highly flexible in terms of future educational demand, be simple in design, and be able to utilize materials which are common to construction and are readily available. A plan made up of multiple buildings appears to be better for repeated construction than a single unit plan. (J. H. H.)

121 Hill, Frederick W.
ADMINISTRATION OF THE BUILDING PROGRAM BY CONTRACT
VS. STAFF ARCHITECTS
1955 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 9 pp.

Organization of architectural services in the Minneapolis school system. Three general areas for determining types of architectural services are: (1) rehabilitation and modernization of existing spaces, (2) addition of new building units to existing units, and (3) design of new school plans. All modernization work is handled by school's residential architectural staff, minor extensions of additions are handled by resident architects, and all major extensions and new buildings are handled by outside architects. Reasons for this organization and procedure are summarized. (H. H. C.)

122 McLeod, John W.
THE SCHOOL ARCHITECT, HIS PROFESSIONAL SERVICES AND RESPONSIBILITIES
1956 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 5 pp.

Summary of methods of selecting architects and architect-owner responsibilities. Services of professional architect include: planning, technical guidance, advice, and counsel. (H. H. C.)

123 North Carolina Department of Public Instruction
MINIMUM CHECK LIST FOR MECHANICAL PLANS AND SPECIFICATIONS
Department of Public Instruction
Raleigh , North Carolina. 1965, 37 pp.

Presents a minimum checklist in the development and review of mechanical and electrical plans and specifications by engineers, architects,and superintendents in planning public school facilities. Specifications are catalogued and coded within the following areas: plumbing, mechanical, and electrical. (H. H. C.)

124 Schwartz, Clem
ELEMENTS OF GOOD BIDDING PRACTICES
School Board Journal
233 Central Street
Evanston, Illinois. May 1966, pp. 36-7.

First, the school officials contact an architect who draws up plans for a school building and submits preliminary sketches. A consulting engineer usually works with the architect. Board members should also submit any ideas they have on particular features they want in the building. Second, when preliminary plans are approved, the architect and engineer complete the plans and establish specifications for equipment. Before approval of final plans, the school board should study the specifications carefully as it is here that trouble can be averted and misunderstanding can be adjusted. Third, contracts are now ready for bidding and the best practice is to have mechanical contractors as prime bidders rather than just one general contractor. A popular form of bid is one in which the engineer selects a brand product and allows the contractor certain latitude in alternate brands. Contractors should submit statements of their worth and what work they have done, both past and present. (A. B. G.)

125 WHAT WORKS AND WHAT FAILS IN SCHOOL DESIGN
Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. March 1967.

An evaluation of 110 tested ideas as to what is succssful and what is unsuccessful in school design. The Houston architectural firm of Caudill, Rowlett, Scott, which has designed 500 school projects in 28 states and 8 foreign countries in the past 20 years and has earned a wide reputation for innovation, was asked by the magazine to appraise the large number of design ideas used in these projects. The firm prepared a list of hundreds of innovations and other design ideas it had used in school construction, then pruned this list to 110 items retaining those suggestions which might find immediate application for school districts involved in building programs. Investigation by visits, phone calls, and letters showed successes and some "bloopers". A brief summary of each of the 110 items is given in the article, with sketch drawings and photographs. The 13 "bloopers" indicated are shown in black and the comment is made that they might have worked under different circumstances. One "blooper" is a "design for individualized learning" that was incorporated into a school which failed to meet its designed function when "management changed". (S. A. M.)

III. LEGAL ASPECTS

126 Braun, Frank R.
A STUDY OF THE RELATIONSHIP IN PLANNING FOR SCHOOL BUILDINGS BETWEEN THE CITY PLANNING AGENCIES AND SCHOOL AUTHORITIES IN AMERICAN CITIES OVER 100,000 POPULATION
University of Minnesota
Minneapolis, Minnesota. January 1961, 275 pp. University Microfilms 60-5593

Legal conditions requiring the cooperation of school districts and city planning agencies were reported from 28 percent of the 110 cities included in the study. Various types and degrees of participation by the city planning agencies and school authorities in the planning for school facilities were reported in the questionnaire survey. Among these, the most frequently mentioned was that of exchanging information relative to the operations of the planning agency and the schools. In 59 cities or 54 percent of those under study this type of relationship was reported. Relationships involving an exchange of information plus a more direct involvement by the city planning agency and the school authorities in the planning for school facilities were reported in 41 cities or 37 percent of those under study. The planning agencies and the school authorities in 21 cities proceeded independently of each other in their operations involving planning. In three cities the activities of the city planning agency were reported to be so limited that no effective participation could be expected of the city planning agency in the planning for school facilities. Using the evidence available from the questionnaire survey, a summary classification of the cities under study was made. More than half of the cities under study, 54 percent, were classified as reporting some cooperative relationships in the area of school facility planning. Thirty-four percent of the cities reported routine procedural relationships. In eleven percent of the cities, no relationships whatsoever were reported. (T. E. J.)

127 Bush, George
CONTRACTS: FORM AND CONDITIONS
1956 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 4 pp.

Briefly traces and defines the contract concept. Presents contractural conditions and trends. Trends include: (1) simplification of form, and (2) frequent revaluation. (H. H. C.)

128 Byrnes, Frederick J.
FEES OF LOCAL LEGAL COUNSELS FOR SERVICES RELATED TO SCHOOL BOND PROCEEDINGS IN NEW YORK METROPOLITAN AREA
Association of School Business Officials of the United States and Canada Proceedings Forty-fourth Annual Convention
2424 West Lawrence Avenue
Chicago, Illinois, 1958, 2 pp.

Major findings were: (1) Bond proceedings are technical matters. (2) Although state statutory requirements differ, most bond proceedings are similar in nature. (3) The majority of school districts employ local legal counsel in school bond issues. (4) There is no consistent methods for determining fee of legal counsel. (5) Studies show trend away from set fees to a "sliding scale" for legal counsel. (6) Services for legal counsels vary considerably. Conclusions concerned the legal nature of bond proceedings, practices for retaining legal counsel, selection of legal counsel, and basis for determining counsel fees. (H. H. C.)

129 Galloway, Archibald N.
LEGAL PROBLEMS RELATED TO MARKETING OF SCHOOL BONDS
Proceedings Forty-fourth Annual Convention
Association of School Business Officials of the United States
and Canada
2424 Lawrence Avenue
Chicago, Illinois. 1958, 8 pp.

Reports the differences between true and quasi municipal corporations, their characteristics and legal requirements resulting from these differences. Because of the peculiar legal position of the school district during bond issues, several matters should be considered in relation to such matters as: debt limits, purpose of issues, referendums, maturity, sale, and district's financial information. (H. H. C.)

130 New Jersey State Department of Education
GUIDE FOR SCHOOLHOUSE PLANNING AND CONSTRUCTION
State Department of Education
Trenton, New Jersey. 1964, 83 pp.

Presents in outline form the mandatory provisions of the New Jersey school building code, and points out design features that are considered to be desirable and recommended. The following sections are presented: (1) policy, service and procedure relating to plan preparation, filing and approval, (2) space requirements and recommendations, (3) lighting in school buildings, (4) ventilation of school buildings, (5) heating, (6) sanitation, (7) building safety, and (8) miscellaneous topics including lockers, floors, and custodial service areas. (H. H. C.)

131 Porter, John C.
PREPARATION OF BIDDING DOCUMENTS AND AWARDING CONTRACTS
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 2 pp.

Briefs the general structure of bidding contracts within the following areas: (1) title page, (2) instructions to bidders, (3) chassis specifications, (4) body specifications, (5) receiving bids, and (6) awarding bids. (H. H. C.)

132 Smith R. N. and others (Editors)
SCHOOL BUSINESS, A Manual on School Business for School Officials
Department of Public Instruction
Des Moines, Iowa. 1965, 84 pp.

A manual designed for Iowa school officials to help them expedite their labors in planning and managing schools. It cites statutes, regulations, practices, attorney general's opinions and reports, and court decisions relative to school business in Iowa. Although the purpose and value of this publication are peculiar to Iowa, school officials in other states might use it in constructing a similar manual of their own. Chapter IX on School Buildings and School Sites and Chapter X on School Insurance should be especially informative to those interested in obtaining school sites, constructing school facilities, and school insurance programs. Included is a 1963 copy of the Standard Form of Agreement Between Owner and Architect recommended by the American Institute of Architects and used by many school boards. (A. B. G.)

133 Taylor, Worthen H.
EXCERPTS FROM GENERAL LAWS RELATING TO DRAINAGE AND SEWAGE
Massachusetts Department of Public Health
Boston, Massachusetts. September 1964, 1 p.

Letter addressed to all local school building committees within the Commonwealth of Massachusetts calling attention to the requirements of Article XI of the Sanitary Code and Section 17 of Chapter 111 of the General Laws as related to sewage disposal systems and the location, construction, alterations, and installation of these systems. (H. H. C.)

134 Texas Education Agency
SCHOOL PLANT SERVICES 1962
Capitol Station
201 E. 11th St.
Austin, Texas. February 1962, 17 pp.

An explanation of the Texas Education Agency School Plant policies and services. It quotes extensively from current laws and regulations pertaining to school plant planning and construction within the State of Texas. It points out provisions essential to a successful working relationship between local schools and the Agency in the area of school plant planning and maintenance. Examples of certification of plans and specifications submitted to the Agency are included. (R. L. F.)

IV. FINANCE

135 Bokelman, Robert
HIGHER EDUCATION FACILITY NEEDS
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 7 pp.

Major efforts must be made to increase the service, residential, and instructional facilities for the nation's colleges. In making these efforts, there must be an evaluation of changing facility utilization; recognition of a need for increased research facilities; and consideration of special residential requirements, as for married students. It is concluded that approximately $31 billion will have to be spent on physical facilities for higher education from 1962-1975. (H. H. C.)

136 BOND ISSUE
Texas Education Agency
Capitol Station
201 E. 11th St.
Austin, Texas. March 1966, 74 pp.

A publication to make available to school boards and administrators contemplating a bond election some of the material which has been used successfully by a number of Texas districts. In selecting materials for this publication, a definite effort was made to provide examples from schools of different sizes and geographical areas of the State. The areas discussed are: (1) statutory authority for insurance of school bonds, (2) general factors to be considered when selling bonds, (3) sample procedures and materials used for the public relations program, and (4) illustrations of materials used by school districts. (H. E. J.)

137 Cory, Paul
A STUDY OF THE FIRE INSURANCE ON PUBLIC SCHOOL BUILDINGS IN FLORIDA
Florida State University
Tallahassee, Florida. November 1962, 159 pp. University Microfilms 62-4603

The collection and analysis of the data included the following findings: (1) Fire insurance on all school buildings of over three classrooms is required by statute. (2) No uniformity of method for obtaining insurance exists in the Florida school system. Thirty percent of the counties use bidding to secure their insurance; 13 counties have 10 policies or more with different insurance companies, with one county using 110 different policies, to cover their insurance needs. (3) Florida's school boards expended $13,345,417 for fire and extended coverage insurance premiums for the 21-year period, 1940-1961, and received benefits totaling $3,254,094, which results in a 24.37 percent cost-loss ratio. (4) The cost-loss ratio for the 10-year period 1951-1961 was 17.6 percent for the public schools as compared with the total of all Florida property insured by all insurance companies cost-loss ratio of 35 percent for the same period. (5) A self-insurance program is feasible with all prerequisites satisfiable. Hypothetical self-insurance plans were developed, based on 80 percent of commercial premium rates which gave an initial 20 percent reduction in premium, also one was developed with a base of 80 percent commercial rate for the first five years, 70 percent for the next five years and 60 percent for the last five years of the 15-year plan. With the reductions in premiums, the accumulation in reserve would amount to $14,000,000 and $12,000,000 respectively. These estimations projected annual savings to the school boards of at least $500,000 annually. (T. E. J.)

138 CURRENT TRENDS IN SCHOOL FACILITIES
School Management
22 W. Putnam Ave.
Greenwich, Connecticut. July 1965, 34 pp.

Provides an overview of school construction cost in 1963, 1964, and 1965, including a state-by-state examination of special facilities. In summary, trends, indicated by construction already reported in 1965, indicate that the 1964 peak will be quickly erased, with all educational building reaching above $4.2 billion in 1965. Of this amount, $3.5 billion will be spent for public schools. In terms of "constant" dollars, public education building will pass $3 billion in 1965 for the first time. Total construction figures for public elementary and secondary schools during the 1963, 1964, and partial 1965 year are presented by charts. (H. H. C.)

139 Edwards, L. F.
COVERAGES AVAILABLE IN SCHOOL PACKAGED INSURANCE
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 8 pp.

Summarizes available coverages in school packaged insurance: (1) public and institutional property program (PIP), (2) special multi-peril institutional program (SMP), (3) comprehensive business policies (KCP), and (4) commercial catastrophe liability policy. Advantages of coverages under each type of package are outlined. (H. H. C.)

140 Evans, Jim
DOLLARS THROUGH THE FINGERS
School Board Journal
233 Central St.
Evanston, Illinois. August 1961, 3 pp.

Finance management is contrasted with school finance with the former term implying concern with the "genetics and reproduction of the dollar." Finance management attempts to avoid loss of income due to idle funds through wise investment of district monies pending their time of use. A series of suggestions for achieving this end is provided and sources of significant savings are listed. The article provides keys for causing dollars to "produce compounded dollars for increased educational benefits." (C. S. B.)

141 Faust, Beaver S.
VALIDATION OF THE CLAIMED ADVANTAGES WHEN SCHOOL BUILDINGS ARE CONSTRUCTED AND FINANCED BY THE STATE PUBLIC SCHOOL BUILDING AUTHORITY METHOD IN PENNSYLVANIA
Pennsylvania State University
University Park, Pennsylvania. March 1961, 231 pp. University Microfilms 61-34

Validation of advantages claimed for the State Public School Building Authority Method included: (1) The cost of financing a project is less; (2) Maximum interest rate and bond discount are known before projects are bid; (3) Dependable construction inspection costs less, particularly on small projects; (4) The necessity for requesting bids for the sale of bond issues is desirable; (5) Method of inspection gives greater assurance that: (a) Plans and specifications are being followed, (b) All items and materials of construction are checked by trained personnel, (c) Rejected materials are removed from project site, (d) Discrepancies in plans and specifications are more likely to be found before projects are bid, (e) Proper decisions regarding construction will be made and carried out; (6) Method of inspection relieves board members and school administrator of much project supervision; (7) The school district profits from the authority's previous experience; (8) Projects are less exposed to undesirable local pressure groups; and (9) Greater consideration is given by suppliers and contractors in making adjustments in materials and workmanship. (T. E. J.)

142 Gardner, Dwayne Everett
DETERMINATION OF COSTS TO HOUSE AN EDUCATION PROGRAM IN NEBRASKA
Nebraska Teachers College
Wayne, Nebraska. March 1962, 257 pp. University Microfilms 62-132

Some of the conclusions of this study were: (1) A program of maintenance which is dependent upon the availability of funds may be excessive in cost. (2) School plant planning specialists and architects need to consider the long-range costs of maintenance during the planning of new facilities. (3) Limitations placed upon the amount of expenditure during the initial construction of new facilities may result in the waste of money. (4) Adequate maintenance staffing and the training of this staff are musts to assure economical maintenance programs. (5) The initial cost of building materials should be balanced with the durability of those materials. (6) Adequate maintenance contributes to public appreciation, interest in, and support of the total school program. (7) Intricate co-ordination is necessary to achieve balance between the instructional program costs, the maintenance and operation costs, and the financing of these costs. Some of the recommendations were: (1) Encourage the study of possible long-range economics in schoolhouse construction by professional educators. (2) Implement a state-wide and uniform system of property accounting. (3) Provide a staff in the State Department of Education to give leadership and service which will (a) Provide leadership concerning the best maintenance and operation practices and standards, (b) Develop a positive approach towards solving school housing problems, (c) Display effective public relations which will inform the lay public with respect to those elements constituting adequate, safe, healthful, and economical school facilities. (T. E. J.)

143 GUIDE FOR TEXAS PUBLIC SCHOOLS PROPERTY ACCOUNTING - Bulletin 637
Texas Education Agency
Capitol Station
201 E. 11th St.
Austin, Texas. 1964, 150 pp.

A bulletin to assist administrators and boards of education in determining the capital outlay of a school district, setting up an adequate insurance program, maintaining complete records of equipment, and developing a systematic schedule of purchasing to aid in the preparation of the school budget. Classifies and defines the specific items of information about land, building, and equipment that need some degree of uniformity in local school systems. Several accounting forms are included. (H. E. J.)

144 Harper, Joe W.
A STUDY OF COMMUNITY POWER STRUCTURE IN CERTAIN SCHOOL DISTRICTS IN THE STATE OF TEXAS AND ITS INFLUENCE ON BOND ELECTIONS
North Texas State University
Graduate School
Denton, Texas. 1965, 210 pp. University Microfilms 65-15,118

The general purpose of this study was to examine the influence of community power structure upon school bond elections. The procedures used were modifications of the power attribution technique. Sociometric data were obtained to disclose persons who generally worked together, in order to study patterns of interaction among community influentials. Certain criticism inherent in the reputational procedures were recognized and adjustments made in the selection processes. The positions and roles of those identified as community influentials were examined in regard to school bond elections in four selected school districts. Structured interviews were used to discover top influentials. This procedure assisted in the validation of the existence of groups involved in school decision making. Affirmatively it was found that: (1) A significant relationship exists between active community influentials and approval of school bond issues; (2) Community power structure plays a significant role in the success of school bond elections; (3) The outcome of a bond election is predictable by sampling the community influentials within the school district; (4) Community influentials who exert power in other community activities also exert power in school bond elections. Negatively, it was found that there is no relationship between the attitudes and support of community influentials and success of a school bond election. When the community power structure favors the passage of a school bond election, the superintendent does not play a major role in the success of the election. (C. S. B.)

145 Hopkins, Robert B.
SAVINGS IN NEW JERSEY BY PURCHASE OF MULTI-PERIL INSURANCE
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 2 pp.

Reports on returns from survey of all district Boards of Education in New Jersey concerning the use of school packaged insurance or "Multi-Peril" policy. Data returns and charts are provided. (H. H. C.)

146 Interstate School Building Service
ECONOMIES IN SCHOOL CONSTRUCTION
George Peabody College for Teachers
Nashville, Tennessee, January 1962, 40 pp.

This document resulted from several meetings involving 29 school plant specialists from a 16-state area. Its purpose is to identify decisions made in the course of a school building program which affect its cost and to provide principles for planning and administering a school construction program which will provide quality school buildings at an economical cost. Special attention is given to financial practices, contractual management, building codes, long-range planning, school sites, building design, construction details, and space considerations. Emphasis is placed on long-range planning as applied to financial needs, educational planning, and site location. It is intended that this bulletin furnish guiding principles for use by school plant planners, superintendents of schools, and local boards of education. (E. J. M.)

147 Johnson, Edwin G.
A NEW LOOK AT SCHOOL INSURANCE PACKAGES
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 6 pp.

A brief summary of the development of packaged insurance and predictions for the future. In summary, educational institutions have produced good loss experience and continue to do so today. Makes suggestions for continuing stable market for package insurance, such as (1) deal with reputable agent or company,

(2) insist that carrier conduct an appraisal or valuation of your property, (3) request company to inspect your property and to submit recommendations as to how you can make school safer, etc. (H. H. C.)

148 **Largent, Francis D.**
COMPARATIVE COSTS AND UTILIZATION OF PERMANENT AND TRANSPORTABLE CLASSROOMS
Stanford University
Stanford, California. November 1962, 151 pp.

The results of this study indicated that the initial construction cost of portable classrooms was $7.84 per square foot as compared to $13.22 per square foot for permanent classrooms. When the costs of converting portable classrooms into permanent structures were considered with initial construction cost, a range of $11.22 to $22.02 per square foot per portable classroom was found. The investigation of the costs of moving portable classrooms revealed that the mean total cost of moving each classroom was $1,047.50 when six classrooms were moved at a time. When one classroom was moved the mean costs per classroom was $2,908.11. Costs of converting portable classrooms into permanent structures varied greatly with the particular conversion job since many factors affected these costs. The range of adjusted square foot costs per room was from $.38 to $14.18. Of the total number of classrooms in districts in California over 10,000 ADA, 16.83 percent were portable classrooms. Portable classrooms were utilized by 82.9 percent of the total number of districts of this size. Population mobility was ranked first the largest number of times by school officials as the most important factor considered when contemplating the use of portable classrooms. The study indicated that portable classrooms can provide a current means to economy, and at the same time meet educational housing needs with a well-planned long-term program. (T. E. J.)

149 McLean, Robert E.
THE RELATIONSHIP OF SCHOOL PLANT EXPENSE AND BUILDING COMPACTNESS IN ELEMENTARY SCHOOL BUILDINGS
Stanford University
Stanford, California. November 1960, 73 pp.

Investigation of possibilities for reducing school plant expense by improved school design. The measure of compactness used in this study was the outside perimeter divided by the enclosed square footage of the building. School plants built during the fiscal years 1949 through 1953 were selected for the study. The expense of maintaining and operating these plants for each of the five years studied, 1954-1958, was divided by the number of square feet of construction on that site for that specific year to derive an annual plant expense per square foot. These five annual plant expenses were averaged to compute the plant expense index for that school. The gross plant expense was achieved by totaling the five annual plant expenses. Three major statistical analyses were used: (1) the part correlation coefficient, (2) the product-moment correlation, and (3) the difference between means. Resort was made to the part correlation technique in order to avoid an element of spurious correlation that results from correlating two indices (plant expense and compactness) that have a common variable denominator. The conclusion was drawn that there is a significant inverse relationship between compactness of a school building and subsequent plant expense when square footage is included in plant expense. Approximately 17 percent of the variance of plant expense is associated with the variability of compactness. (T. E. J.)

150 Meadville, Harry William
THE RELATIONSHIP OF INITIAL SCHOOL PLANT COST AND BUILDING
COMPACTNESS IN SECONDARY SCHOOL BUILDINGS
Stanford University
Stanford, California. November 1961, 79 pp. University Microfilms 61-4114

An investigation of variables that are involved in the initial cost of a school plant. The variables given complete analysis were:

1. Types of Construction
   (a) Class A--Steel frame, fireproof structures
   (b) Class B--Reinforced concrete and concrete block construction
   (c) Class C--Wood frame and stucco construction
2. Size of school plants
   (a) Schools under 50,000 square feet
   (b) Schools 50,000 to 100,000 square feet
   (c) Schools over 100,000 square feet

The hypothesis that there was an inverse relationship between initial cost and building compactness was valid regardless of how these data were grouped. The coefficient of correlation on all 26 schools was .95. The variables were each analyzed, and highly significant correlations were obtained even though some were very small group samplings. The Class A construction, a sample of 6, had a coefficient correlation of .83. Classes B and C, 10 in each sample, yielded a correlation of .90. Size (area) of schools gave meaningful information. The smaller schools under 50,000 square feet, 5 in number, yielded a correlation at .78; in the 50,000 to 100,000 group, the correlation was quite similar at .77 for a sample of 8. But 13 schools in the over 100,000 square feet group yielded a correlation of .90. The primary purpose of the study was to discover what relationship exists between initial cost and building compactness. No attempt was made to relate it to the value of the educational program. (T. E. J.)

151 MORE SCHOOLS FOR YOUR MONEY! FINANCE HANDBOOK
Commission on School Buildings
New York State. 1954, 47 pp.

The handbook designed to assist school administrators and others concerned in the development of programs for financing school buildings. The selection of an appropriate method of payment, the effective use of credit, and an appreciation of the factors which make for a good market for school bonds will result in a financially better and stronger educational system. The management of the school district's capital expenditures can achieve reductions in interest costs and earlier recapture of needed borrowing power, and can avoid leaving a heavy debt for future generations by an equitable distribution of the tax burden. While some statutory provisions are discussed, the handbook is not intended as a review of legal procedures. Since these requirements are frequently amended, the reader is cautioned to refer to the statutes for changes, particularly in the Education Law and Local Finance Law, subsequent to the date of this report. (T. E. J.)

152 Mushkin, Selma J. and McLoone, Eugene P.
LOCAL SCHOOL EXPENDITURES, 1970 Projections
Council of State Governments
1313 East 60th Street
Chicago, Illinois 60637. November 1965, 96 pp.

The number of school-age children is not increasing as fast as in the past. The children who will be in schools in 1970 are already born so it is possible to project school conditions in 1970 with a high degree of certainty. One major uncertainty centers in the migration of children from one state to another. There is no intention in this publication to make future forecasts. The 1970 figures are estimates based on several stated assumptions. In 1970 states and local governments will spend $31 billion on public schools insted of $20.4 billion as in 1964. The quality of schooling will be improved; there will be remedial and after-school tutorial services; there will be expanded educational opportunities in the summer months. No attempt is made as to what new federal grants for education, and programs established under the Office of Economic Opportunity's attack on poverty will have on the schools of 1970. The Projection is focused primarily on what the states and localities will spend in 1970 on public schools under the assumed conditions existing at that time. Included in the Projection are interesting data on extending school services, extending the schooling period, lenghthening the school year and the school day, and other extensions possible under new federal legislation. School board members and other officials should be interested in the 1970 assumptions on the number of classrooms needed, changes in programming, cost of school construction, and how funds will be raised for schools. Many state-by-state tables are included. (A. B. G.)

153 Nation's Schools
SEVEN STEPS CUT SCHOOL BUILDING COSTS
1050 Merchandise Mart
Chicago, Illinois. June 1965, pp. 30-32.

A strong construction safety program can save thousands of dollars for a school district engaged in a building program. The less insurance money the contractor must figure into his payroll (60 percent of the school contract, ordinarily), the lower he can bid. The seven safety provisions in the New York City plan, aimed at reducing the number of accidents at school construction sites, include: (1) sharply increase bid bond requirements, (2) specify that a bidder show his current insurance rating on the bid document, (3) shift to the surety company the responsibility of qualifying the prospective bidder's financial-accident ratings, (4) require a contractor to turn in accident records promptly to the school's division of design and construction, (5) make it mandatory that monthly progress payments to contractors be certified by the safety inspector and approved by the safety director, (6) include a safety code pattern after the New York City Code as an integral part of the contract documents, and (7) continue to send the field personnel to a 20-hour safety course conducted by U. S. Bureau of Labor Standards, with one-half of this time charged to the division. (T. E. J.)

154 Nation's Schools
THIRTY-EIGHT DOLLAR, TIME, STEP, AND SPACE SAVERS
1050 Merchandise Mart
Chicago, Illinois. May 1964, 9 pp.

2

Thirty-eight examples, hints, helps, remedies, ideas, cases and suggestions concerning "savers of dollars, time, space and steps". Some of the ideas were offered to be utilized immediately by administrators. Others were of a nature that require translation or interpretation for local adaptation. The four major topics under which suggestions were listed included: (1) maintenance guides that point to operational savings, (2) ideas for school business administrators, (3) savers designed to cut construction expenses, and (4) ways to add life to the instructional program. The report was compiled with the cooperation of the research committee chairman of the Association of School Business Officials of the United States and Canada, members of the National Council on Schoolhouse Construction and the Editorial Advisory Board of "The Nation's Schools," and other schoolmen and architects. (T. E. J.)

155 Naylor, T. H. Jr., and Cain, G. J.
MISSISSIPPI'S 300 MILLION DOLLAR SCHOOL CONSTRUCTION PROGRAM
State Educational Finance Commission of Mississippi
Jackson, Mississippi. November 1965, 23 pp.

A complete story of the program of assistance to local school districts in the field of school plant construction, from the beginning of the program in 1946 to the present. The determination of needs by surveys and commissions is explained. The operation of the Public School Building Fund is explained under headings of Purpose, Requirements, Long Range Plans, and Procedures. The accomplishments of the program are listed in terms of facilities completed. A table of amounts allocated to school districts is given, also a table of amounts allocated per year. A graph depicts total expenditures in this field and shows the extent in millions of dollars of state participation from fiscal years 1953-1954 to and including 1964-1965. A summary describes site requirements, the facilities included, the reduction in numbers of school districts from over 2,000 to 150, the growth in school attendance, the cost per square foot, etc. (W. F. C.)

156 Norton, John K.
WHAT EVERYONE SHOULD KNOW ABOUT FINANCING OUR SCHOOLS
National Education Association
Committee on Educational Finance
Washington, D. C. 1966, 63 pp.

Conclusions are: (1) it has been necessary to increase expenditures in the past decade because of mounting school enrollment, inflation, and expansion of the educational program, however, expenditures have not been sufficient to place education on a firm base; (2) substantial increases in expenditures for school and other educational institutions and agencies are both necessary and wise; (3) our affluent and rising economy can readily meet the increased investment in education; (4) the local school budget should be looked upon as the financial answer to several critical educational questions; (5) all state constitutions make education a responsibility of the state legislature; and (6) the necessity of national support of education to supplement the revenue of state and local units has been made clear by the experience of the past generation. A 42-item bibliography is included. (H. H. C.)

157 Orton, Kenneth L.
THE COMPARATIVE COSTS OF THE MULTI-STORY VS. ONE-STORY CONSTRUCTED SCHOOL BUILDINGS
1955 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 14 pp.

Results of a comparative study of Community High School, Dundee, Illinois, and Janesville Senior High School, Janesville, Wisconsin. Building requirements, features, building materials, and other construction costs of each are analyzed. The study concludes that other considerations, such as size of school site, type of educational program desired, selection of architect, and safety and health factors are additional factors influencing costs and building type. (H. H. C.)

158 Parks, George M.
A SUMMARY: THE ECONOMICS OF CARPETING AND RESILIENT FLOORING
Wharton School of Finance and Commerce
University of Pennsylvania
Philadelphia, Pennsylvania. June 1966, 16 pp.

After examining installed cost, service life, maintenance labor costs, costs of capital equipment, and expendable equipment and supplies in 19 commercial and institutional installations in the Philadelphia area, the Wharton study concludes: Resilient flooring is at all times more economical than carpet. The area of least advantage of resilient flooring showed annual carpet cost to be 123 percent of the vinyl-asbestos annual cost; in the area of greatest advantage to resilient flooring, annual carpet costs were 270 percent of annual vinyl-asbestos costs. In general, this study found that the advantage of resilient flooring increased as the appearance level decreased. The cost difference in maintenance labor, expendable supplies, and capital equipment for carpeted and resilient flooring are approximately the same at all levels of appearance and traffic conditions. The basis for the annual total cost difference in all cases is composed almost entirely of the differences in the initial costs and service lives of the two flooring materials. Therefore, it can be concluded that a rational economic decision between carpet and resilient flooring can be based almost entirely on the initial cost and service life differences of the two materials. (J. H. R.)

159 Paseur, C. Herbert
DECENTRALIZED SCHOOL VS. CENTRALIZED SCHOOL, Investigation No. 3
Caudill, Rowlett and Scott
3636 Richmond Avenue
Houston, Texas. July 1960, 12 pp.

A basic comparison between two intermediate schools housing grades 5 through 8 conducted in Saginaw, Michigan. Both schools were let to the same contractor on March 15, 1960; used the same types of structural, mechanical, and electrical systems, materials, and construction details, but were different in geometric layout; were located on level sites with approximately the same soil condition; had exactly the same educational program and space requirements for 650 pupils. The only major difference, which prompted the experiment, was the site size. The centralized school site consisted of 17.5 acres; the decentralized school site, 32.1 acres. A chart of the breakdown of cost between the two schools is divided into three areas and 18 items: (1) cost data; (2) education data; and (3) geometry data. A site layout drawing is included also. The decentralized school cost 3.8 percent more; but the study group wishes to wait a year or two for an evaluation by the superintendent and faculty of the educational performance. There is not conclusive evidence at this time that first cost savings should be the determining factor for planning future schools. Further evaluation may show that the small additional cost may buy a bargain in increased educational performance. (M. W. B)

160 PLAN FOR FINANCING
School Building Assistance Commission
Boston, Massachusetts. November 1962, 1 p.

Outlined form for determining estimates of cost, methods of financing, and term of bonds within the categories of existing buildings and planned new construction. (H. H. C.)

161 Price, Alfred J.
STATE CASE STUDIES
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 4 pp.

Presents survey results of school-packaged insurance policies from Illinois and Wisconsin school systems. Results of these surveys are charted and summarized. Previous expenditures, present expenditures, and savings figures are provided. (H. H. C.)

162 Price, Dana
OPERATING COSTS OF AIR-CONDITIONED SCHOOL BUILDINGS
Proceedings of School Facilities Conference
University of Houston
Houston, Texas. 1961, pp. 53-55.

When the costs of operating an air-conditioned building are considered, a common error is to consider the effect of the system only on the gas and electric bill. There are several other factors that must also be considered. Emphasis is on the importance of reducing the heat load created by the lighting system and the possibilities of an economical high frequency electrical generator for use with fluorescent lighting. (C. A.)

163 PROCEDURES TO BE OBSERVED IN ORDER FOR SCHOOL DISTRICTS
TO QUALIFY FOR STATE SCHOOL BUILDING FUNDS
Mississippi State Department of Education
Jackson, Missippi. January 1964, 3 pp.

Sets forth procedures that should be observed in order for Mississippi school districts to qualify for state school building funds. Requirements include site selection, site approval, application for school building projects, execution of agreement between board of trustees and the Commission, etc. (H. H. C.)

164 A PROGRAM FOR PROPERTY ACCOUNTING IN UTAH
Utah State Board of Education
223 State Capitol
Salt Lake City, Utah 84114. 26 pp.

Presents a program for property accounting in Utah involving the use of mark-sensing IBM cards based on evaluations made after a physical inspection of school buildings and equipment. Instructions for rating school facilities include directions for the rating of the whole school plant, individual buildings, the school site, and of furniture and equipment. Some space is given to a detailed explanation of the use of the mark-sense cards. Eighteen different factors are considered in the rating of school facilities and six steps are listed in the data processing procedure. (E. J. M.)

165 REQUEST FOR CERTIFICATION OF FINAL APPROVED COST
School Building Assistance Commission
Boston, Massachusetts. June 1952, 1 p.

Form provides for certification request of final approved cost of construction within the areas of building cost, architect cost, equipment cost, site development cost, insurance cost, and advertising cost. (H. H. C.)

166 Rowlett, John M. and Bullock, Thomas A.
RELATIONSHIP OF COST TO THE GEOMETRY OF A BUILDING - Research Report 5
American School and University.
737 3rd. Ave.
New York, New York. Vol. 27, 1955-56.

An approach to the problem of how to obtain the maximum amount of quality teaching space for each building dollar. Contains line drawings, floor plans, specifications, and cost comparisons of two schools custom-designed for overall economy with features such as: (1) minimum outside perimeter; (2) simplified use of materials; (3) repetitive structural bays; and (4) minimum wall height. Both buildings were simple and compact and completely adequate for the educational programs. Conditions of the sites made one school more geometrically complex than the other. The results to date, construction-wise and educationally, have proven that the taxpayer got the most for his money in the simpler building. (M. W. B.)

167 Schaefer, J. W.
FUTURE MAINTENANCE COSTS AS RELATED TO CONTINUED
MAINTENANCE COST INCREASES
Association of School Business Officials of the
United States and Canada
1961 Volume of Annual Proceedings
Chicago, Illinois. 4 pp.

Reports on Los Angeles City School District's maintenance and operations budget with emphasis on planning for the future. In an area of rapid growth and expansion, reduction of the maintenance dollar is an important consideration. Maintenance savings are discussed in the areas of purchasing of quality rather than low-priced materials. Suggested areas include: (1) use of anodized aluminum window trim to reduce the never-ending job of repainting wood or steel. (2)

use of brick, ceramic or other permanent wall surfaces requiring little or no repainting in exterior walls. (3) installation of 20-year roofs whenever possible even though you do not buy the bond for it, etc. (H. H. C.)

168 SCHOOL INSURANCE
Texas Association of School Business Officials
Austin, Texas. March 1964, 57 pp.

A study of insurance programs. Areas discussed are: (1) definition of terms, (2) the amount of coverage, (3) insurable values, (4) inventories, (5) local policy and local financial ability, (6) securing lowest premium rates, (7) policy types, (8) types of insurance, (9) coinsurance, (10) types of coverages, (11) keeping adequate records, (12) spreading the insured risks, (13) making claim settlements, (14) pupil accident insurance, and (15) fire protection. A checklist for adequate insurance in Texas schools is included. (H. E. J.)

169 School Management
COST OF BUILDING INDEX
School Management Magazines, Inc.
Greenwich, Connecticut. July 1965, 10 pp.

Presents a guide to the current cost of school building and provides a study of the factors that determine the worth of the school building dollar. Cost of building index is reviewed with reference to (1) effect of materials and labor on construction costs, (2) on-site labor costs, and (3) off-site labor costs. In summation, the Cost of the School Building Index (CSBI) figures that the end of the inflationary spiral in school construction is not yet in sight. Labor costs are rising less quickly this year, but it seems apparent that some materials costs are starting to spurt ahead. By using the figures given in the article, however, it is possible to analyze the costs of building your own schools. Charts and graphs are provided. (H. H. C.)

170 Seavers, Gilmore B. and others
ECONOMY IN SCHOOL CONSTRUCTION
Pennsylvania School Study Council
University Park, Pennsylvania. 1957, 14 pp.

The authors of this report have examined the available publications dealing with school construction from the point of view of economy, using the term "economy" to relate not only to low costs of construction but to good value for money spent in terms of the educational environment obtained and ease of maintenance. Under the heading "Design and Structure" the report lists, with comments, the 15 methods of cutting school construction costs contained in a 1952 pamphlet, Cutting Costs in Schoolhouse Construction by the American Association of School Administrators, and adds to the list additional methods. Under the heading, "Construction Materials," the report emphasizes the need for a research attitude toward the selection of materials and the proper combination of materials to produce an economical structure. Under the same heading quite specific recommendations are made for the selection of materials for (a) classroom flooring, (b) a typical classroom and (c) a typical corridor. While the report tends under the latter heading to be quite specific in its recommendations, the conclusion to the report admits that "there may be no final and conclusive answer to the problem of economy in school construction," and suggest that new inventions and discoveries will provide new materials that will permit improvements in design. Continued study and experimentation are required if more economical buildings and facilities are to be obtained. (C. A.)

171 St. Cyr Architects and Associates, Inc.
THE EVOLUTIONARY ROUND SCHOOL, Douglas MacArthur Elementary School, Southfield, Michigan
H. F. Campbell Company
Detroit, Michigan. 2 pp.

Describes the economies in space and money obtainable through the construction of a round school building with a unique heating and ventilating system. The builder shows that when compared to a compact two-story award winning building, the round school has:

72% less wall area
62% less wall length
70% less corridor area (and even the corridor can become part of any adjacent teaching station)
40% less mechanical equipment area
5% less building area (but with two more classrooms and larger teaching stations)
15% larger multi-purpose room (and with controlled access for community use at night)
44% larger instruction materials center (becomes amphitheatre at will)
62% larger audio-visual room (that is a vital "nerve center" of the school)
10% larger office area (centrally located to all classrooms)
30% lower house-cleaning costs
50% lower fuel costs
40% lower insurance costs
200% better ventilating system (Plus cooling too!)

(R. L. F.)

172 A STUDY OF COMPARATIVE COSTS AND FACILITIES OF COLLEGE SCIENCE AND LABORATORY BUILDINGS
Rensselaer Polytechnic Institute
Troy, New York. February 1962, 42 pp.

Presents factual information concerning both the costs and the general characteristics of recent buildings for science and engineering, analyzes and interprets this information, and presents the results in an informative and concise manner. Fourteen buildings were used in the study. The general character of construction and materials used in these fourteen buildings is given. The conclusion of the study is given. (H. E. J.)

173 Whitbeck, John
FINANCIAL PROBLEMS RELATED TO MARKETING OF SCHOOL BONDS
Proceedings Forty-fourth Annual Convention
Association of School Business Officials of the United States
and Canada
2424 West Lawrence Avenue
Chicago, Illinois. 1958, 8 pp.

Common problems of school districts and professional brokerage firms were discussed with reference to determining bond's value. Bidding, securing, and determining resale value of school bonds, criteria in appraisal, and guidelines for writing community descriptions were the major areas of concern in determining school bond values. (H. H. C.)

174 Wright, Henry
SOME BLUNT FACTS ABOUT AIR-CONDITIONED SCHOOLS
School Management
22 W. Putnam Ave.
Greenwich, Connecticut. 1960.

Schoolmen want answers to two questions. (1) How much does air conditioning cost? (2) Do we really need it? Reports that greatest obstacle is plain fear of citizen reaction. According to Superintendent R. Guild Grey, Clark County, Nevada, this is not borne out in his experience in the $11.35 junior high which is air conditioned. Reports it is cheapest school they have built because of compact design, minimum window opening, etc. Reports comparative costs for above school and Alton, Illinois schools that are air conditioned. Cites increased use of buildings in summer - both as schools and for community use. Cites learning rate in hot weather vs. same in cool weather. If cannot air condition when school is built, provision should be made for future installation - cites comparative costs. Reports public acceptance in many localities. Gives estimates of cost of operation. States maintenance is lower in air conditioned schools. Reports air conditioning adds about 5 percent to cost. Question is one of economics. States that air conditioning justified by greater use of buildings and suggests school could operate all year. (C. H.)

175 Wyatt, Spencer B.
A STATE SUPPORTED PROGRAM FOR FINANCING PUBLIC SCHOOL
PLANT FACILITIES IN UTAH SCHOOL DISTRICTS
Utah State University
Logan, Utah. 1963, 279 pp.
University Microfilms 62-6318

Some major conclusions drawn from the study were: (1) Authorities in school finance are in general agreement that state support for school district capital outlays should be included in the state foundation program for financing public education. Furthermore, there is general agreement concerning evaluative criteria by which the adequacy of any state capital outlay support program can be determined. (2) Utah has followed the national trend in that first efforts at state support were considered to be on a temporary, emergency basis. It is now recognized that capital outlay support must be continuing and permanent. (3) There is conclusive evidence that a critical shortage of adequate school plant facilities has existed in Utah school districts since 1945. Since that time numerous studies have indicated that the shortage has persisted and, in fact, significantly increased. (4) Utah has not yet recognized the magnitude of financial support needed in local school districts. Whereas the 1959 Legislature provided for a maximum annual program of approximately $2,000,000, the yearly amount actually needed is approximately $12,000,000. (5) Many Utah school districts are devoting too large a proportion of their annual budget to capital outlay purposes. (6) A new distribution formula is vitally needed to replace the one set up in the 1959 Continuing School Building Program. A recommended distribution formula was developed in the study. (T. E. J.)

V. THE BUILDING—GENERAL AND TECHNICAL ASPECTS

176 Aaron, Norman J.
STANDARDIZATION OF VARIOUS FUNCTIONAL UNITS IN THE SCHOOL
1955 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 3 pp.

Suggests that standardization of fixtures, heating, plumbing, and electrical systems provides more efficient and economical maintenance. Also suggests the need to remain alert for new materials and look for combinations of old materials. Examples from practical experience are offered. (H. H. C.)

177 Acuff, William Turner
A STUDY OF THE VISUAL ENVIRONMENT IN SELECTED CLASSROOMS
University of Tennessee
Knoxville, Tennessee. March 1963, 243 pp. University Microfilms 63-2160

Analyses of the data provided the following major findings: (1) Readings of the illumination levels obtained in the thirty classrooms ranged from 359 foot-candles to 9 foot-candles. Three of the thirty classrooms (10 percent) had illumination levels meeting the specified illumination criteria established for the area. Eleven classrooms (37 percent) had average levels of illumination meeting the foot-candle requirements. All eleven classrooms utilized fluorescent lighting. (2) Three of the thirty classrooms (10 percent) met all phases of the criteria relating to surface brightness ratios. Twenty-one of the classrooms (70 percent) had window brightness exceeding the brightness ratio established for the classroom and twenty classrooms (67 percent) had unacceptable floor brightness. (3) Fifteen classrooms (50 percent) fully met the criteria relating to luminaire brightness. (4) Two of the thirty classrooms (7 percent) had surface reflectances completely meeting the criteria. Eight surfaces in each of the thirty classrooms were measured for reflectance. Satisfactory ceiling reflectance was found in four classrooms (13 percent); chalkboard surfaces showed satisfactory reflectance in nineteen classrooms (73 percent); desk top surfaces in sixteen out of twenty-nine classrooms (55 percent) had satisfactory reflectance; floor reflectance surfaces in twenty-seven classrooms (90 percent) measured satisfactory reflectance; furniture surfaces in fifteen classrooms (50 percent) possessed satisfactory reflectance; tackboard surfaces in ten classrooms (36 percent) had satisfactory reflectance; the trim surfaces in fourteen classrooms (48 percent) showed satisfactory reflectance, and wall surfaces in twenty-two classrooms (73 percent) had satisfactory reflectance. (T. E. J.)

178 AIA School Plant Studies
THE EDUCATIONAL ENVIRONMENT
American Institute of Architects
1735 New York Ave.
Washington, D. C. 1964, 8 pp.

Atlantic City meeting of architects and educators. Seminar discussion areas: (1) acoustics and light, (2) air conditioning (3) air curtains, (4) carpeting, (5) color, (6) courtyards, (7) lighting (outdoor), (8) science labs, (9) site plan, (10) classroom temperature control, (11) school building utilization, and (12) windowless classrooms. (H. H. C.)

179 Arkansas State Department of Education
A GUIDE FOR SCHOOL HEATING, LIGHTING, AND VENTILATION
State Department of Education
Little Rock, Arkansas. 14 pp.

Summarizes the recommendations for specifications for heating, relative humidity, venting, radiation shield, lighting levels, brightness ratio, unilateral lighting, bilateral lighting, window areas, glare, and ventilation in the school. Diagrams and sketches are provided. (H. H. C.)

180 Dickey, Donald D.
ATHLETIC LOCKERS FOR SCHOOLS AND COLLEGES
Post Office Box 6630
Minneapolis, Minnesota 55420

A 24-page booklet to make available to school and college administrators, information relative to the selection, design, and purchase of varsity and physical education lockers. The booklet contains numerous photographs and discusses construction, materials, ventilation, color, security, and specialized accessories. (P. J. O.)

181 Bagwell, Walter M.
PROS AND CONS OF CARPETING
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 5 pp.

Reports on the differences between actual and theoretical costs involved in the use of carpeting in the Fairfield Community School District, Fairfield, Iowa. Reference is made to various types of carpeting weights, ply, pitch, pile, and other carpeting characteristics that should be considered when planning installation in the school. (H. H. C.)

182 Bruning, Walter F.
HOW TO SELECT A SITE FOR EASY MAINTENANCE
Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. January 1964, 1 p.

Suggestions concerning site selection. Major points include: (1) After a general school location has been selected by means of an accurate projection of population growth, the next step is to pinpoint the exact site. (2) Accessibility. Select a site easily accessible by car, bus, and foot to avoid maintenance of an extensive on-site road and walk system. (3) Size of Site. The site should have enough space for future expansion so that duplication of site and consequent duplication of maintenance can be avoided. (4) Topography. A good marriage between the building and its surrounding terrain should result in gentle, easy-to-maintain slopes that will provide good drainage away from the structure. (5) Exposure. Areas exposed to high winds should be avoided. (6) Special Areas. Be sure that service areas are wide enough for safe, easy maneuvering of vehicles. (T. E. J.)

183 Bruning, Walter F.
THE SCHOOL SITE -- ITS SELECTION, ANALYSIS, DEVELOPMENT, AND MAINTENANCE
Jacobsen Manufacturing Company
Racine, Wisconsin. February 1966, 30 pp.

A manuscript prepared for the American Association of School Administrators Annual Convention. Information given concerns (1) the master plan, (2) the search for the site, (3) alternate sites, (4) aids used in site selection, (5) preliminary site studies, (6) efficient grounds, (7) the components of the site, (8) landscape materials, (9) ground maintenance, (10) road surface materials, (11) curbing materials, (12) handrails, (13) exterior steps, (14) fence materials, (15) exterior lighting materials, (16) developing lawns, (17) plant materials, (18) maintenance personnel, and (19) a checklist of timesaving tips. (H. E. J.)

184 CARPETING IN SCHOOL
Progressive Architecture
Chemstrand Company
New York 1, New York. September 1962, 7 pp.

Reports on the use of carpeting in the Andrews High School, Andrews, Texas; the Shaker High School, Newtonville, New York; and the Regina Coeli School, Toledo, Ohio. Characteristics and maintenance study of carpeting within each school are summarized. Charts and photographs are provided. (H. H. C.)

185 Caudill, Rowlett and Scott
THE DEVELOPMENT OF THE TEACHING SPACE DIVIDER Research Report No. 1
American School and University
737 3rd Ave.
New York, New York. Vol. 26, pp. 433-488.

A report on Teaching Space Dividers, one solution to the problem of putting to work for classroom use the walls that subdivide a school into classrooms. A wall can be used as a teaching device because it is a vertical work surface just as a table is a horizontal work surface. The functions of the partition are to serve as units to divide space, to serve as vertical work surfaces, and to facilitate easy interior changes. Chalkboard, dowel, tackboard, and perforated panels are the four types of Teaching Space Dividers which are described and illustrated. These units have the following common features: (1) are prefabricated and demountable four feet wide modules; (2) extend from floor to near-ceiling height; (3) are educational devices usable by both teacher and pupils;

(4) can be applied directly on the studs, eliminating moulding and usual finished wall behind; (6) can be interchanged with others, by teacher or janitor, quickly and easily with a screwdriver. In bids at Laredo, Texas, involving three schools and 44 classrooms, Dividers cost only 4 percent additional to the total construction cost compared with conventional walls. The Teaching Space Divider is still in the developmental stage but its economy and educational versatility give it a distinct advantage over the wasteful, inflexible, and inadequate vertical surfaces of heavy masonry partitions. (M. W. B.)

186 Caudill, William W.
SHELLS AND THE EDUCATING PROCESS, Investigation No. 8
Caudill, Rowlett and Scott, Architects
3636 Richmond Avenue
Houston, Texas. July 1963, 26 pp.

A publication based on a speech, SHELLS AND THE EDUCATING PROCESS, delivered by William W. Caudill on October 1, 1962 at the World Conference on Shell Structure held in San Francisco. The publication includes photographs, map-pin arrangements and domino illustrations. He states: "I doubt that there will be many more shelled classrooms in the future because there will be no classrooms in the future ---- entirely new methods of teaching have evolved and will require new spaces." A project, sponsored by New York City, to plan the schoolhouse of the future is described. It is based on the concept of large column-free space for groups of 150 children, kindergarten through second grade with a team of four to six teachers, instead of the small box-like spaces to house 25 to 30 pupils and one teacher. Mr. Caudill concludes: "I can see more shell structures in schoolhouses. The shell seems to be a generic solution to team teaching and the individualized curriculum." (M. W. B.)

187 Caudill, William W. and Bellomy, Cleon C.
SPATIAL APPROACH TO PLANNING THE PHYSICAL ENVIRONMENT
American School and University
737 3rd Ave.
New York, New York. 1954-55

An explanation, in simple graphic terms, of what is meant by the spatial approach to planning the physical environment. Technological progress makes possible the spatial approach which when simply defined states "start with all nature, keep everything desirable--spaciousness, view, natural light, comforting breezes--and eliminate only the undesirable." There are two important architectural elements used by planners following the spatial approach: (1) the horizontal screen or umbrella that serves primarily to keep the sun and rain off, may be required to help let in light, to keep out sun heat or to retain room heat, or to frame desirable view; can be made to take virtually any shape and position; (2) the vertical screen that acts as a wind break, a sound source, thermal screen, and a view screen. Sketches of the four basic screen types, both horizontal and vertical, with which the architectural composer works are presented: the transparent screen, translucent screen, solid or opaque screen, and the pierced screen with the qualities of opaqueness, translucency, and airflow. "The spatial approach will give the architect and the builder the needed freedom to balance the construction budget... and will also give to the educator a real chance to offer his pupils comfortable, highly functional spaces for learning." (M. W. B.)

188 CENTRIFUGAL ROOF AND WALL VENTILATORS
The Trane Company
La Crosse, Wisconsin. July 1962, 19 pp.

Discusses modern ventilation for schools, churches, civic centers, offices, clinics, restaurants, and theatres. Information given includes: (1) design for new or old buildings, (2) performance and power, (3) rating, (4) complete range of sizes, (5) maintenance, (6) selection, (7) installation of units, (8) weatherproof materials used, (9) types of units, and (10) mechanical specifications. Several tables and drawings are included. (H. E. J.)

189 Chapman, Dave
PLANNING FOR SCHOOLS WITH TELEVISION: DESIGN FOR EDUCATIONAL TV
Education Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. April 1960, 96 pp.

This study begins with an analysis of the elements that affect the educational program: the continuing increase in the number of students to be educated; the increasing quantity of information and processes to be learned; the prospect of continued shortage of teachers and the need to make the best use of teacher skills; the changing size of the administrative unit. It continues with a study of trends in teacher-student space relationships, teaching techniques in relation to group sizes, teaching spaces for various group sizes and flexibility of design of teaching spaces. While a substantial portion of the balance of the study deals specifically with the planning of schools for the effective use of television and provides a practical guide to the technical aspects of television, the facilities described, other than the actual television apparatus, are basically those required for a good school using modern techniques and equipment. The report contains a large number of excellent diagrams showing space arrangements variable as to size and use for large and small groups. (C. A.)

190 Christian, Floyd T.
COMPREHENSIVE CAMPUS PLANNING
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 8 pp.

This is a comparison of two schools, one equipped with air conditioning and one without, in terms of cost of maintenance and depreciation, educational outcomes, and the incidence of physical illnesses and psychological problems among pupils. Two junior high schools were employed in the study, each meeting similar standards of area, enrollment, and cost of construction. The schools are described physically, and the mechanics of the project are considered. Preliminary findings are reported. (H. H. C.)

191 COMMUNITY SCHOOL SITE, THE
NDEA Title II, Bulletin No. 314
Michigan Department of Education
Lansing, Michigan. 1965, 25 pp.

A bulletin to provide teachers, administrators, and architects with some insight into the creative development and use of the school site as a laboratory for learning. An outline for site planning and use is given. Developing landscape features to fit the school's curriculum is discussed. (H. E. J.)

192 COMPONENTS FOR SCHOOL CONSTRUCTION IN THE MID-HUDSON REGION
Rensselaer Polytechnic Institute
Troy, New York. March 1966, 18 pp.

The final part of a three-part report, of a feasibility study to sample all appropriate aspects of the school construction climate in New York State to determine whether the School Construction System Development Process is applicable to to school construction in the Mid-Hudson Valley and explore possible ways that such school's building programs might be accomplished. The component approach tries to resolve the problem encountered in putting together some major parts of the building by developing a system of parts that all work together. This report contains a summary of the eight "climate areas" that were investigated, and conclusions as to the various aspects of feasibility. (H. E. J.)

193 Connecticut State Department of Education
STRUCTURAL CONSIDERATIONS IN SCHOOL BUILDING ECONOMY, Series No. 5
Connecticut State Department of Education
Hartford, Connecticut. June 1963, 28 pp.

Number 5 in a series of planning guides suggesting economy considerations relating to structural features of school plants. A school building is defined as a "shelter structure" consisting of structural members, weather protection, mechanical installations, finishing, and built-in-equipment. Soil, site, and climate, significant factors in first design studies which govern the choice of the structural system are discussed. A chapter is devoted to weather protection elements which involve: roofing, flashings, overhangs, and sunshades, passage of people and goods, and passage of light and air, acoustical correction, and aesthetic improvement. Fire-resistivity in schools is discussed briefly as are some basic comparisons, such as, one-story vs. two-story, exposed vs. concealed structure, roof pitches, and new materials and techniques. Modular measure is recommended for general adoption for school building use. (D. O. B.)

194 CONVENTIONAL GYMNASIUM VS. GEODESIC FIELD HOUSE -
A Comparative Study of High School Physical Education
and Assembly Facilities
Educational Facilities Laboratories
477 Madison Avenue
New York, New York. 17 pp.

The Montgomery, Maryland, Board of Education employed McLeod and Ferrara, Architects, to design West Bethesda High School. Total construction cost of the project was established at $3,150,000. The architects were instructed to make a special study of facilities for physical education. As a result of their preliminary investigation, the architects determined that the geodesic dome was a definite possibility for providing desirable facilities for physical education. Educational Facilities Laboratories were approached and agreed to make a two-stage grant to help finance the architectural planning of a conventionally shaped gymnasium and a field house using the geodesic dome. Planning on both types of physical education facilities was to proceed beyond preliminary plans only if the geodesic dome design could provide equal facilities for less cost than the conventional gymnasium or larger and better facilities than the conventional gymnasium at lower cost. Plans were completed and bids received on September 27, 1960. The low bidder bid $589,761 on the conventional gymnasium which had an area of 31,586 square feet and $583,674 on the geodesic dome field house which had an area of 35.800 square feet. The Board of Education accepted the lower bid on the geodesic dome facility. All of the facilities included in the conventional gymnasium were included in the geodesic design field house. In addition, the geodesic design provided seating for an extra 1,000 spectators at athletic events at no additional cost in terms of building. It was recommended that other school districts give consideration to geodesic structures. (R. L. H.)

195 Cox, William G.
HEAT PUMP SYSTEMS FOR SCHOOLS
Proceedings Forty-fourth Annual Convention
Association of School Business Officials of the United States
and Canada
2424 West Lawrence Avenue
Chicago, Illinois. 1958, 5 pp.

Presents the characteristics and uses of heat pumps in air conditioning schools. Technical and year-round utilization improvements of window units were discussed. Evaluation of cost and effectiveness of the individual unit in one school in the Hampton, Virginia district were summarized with reference to initial costs, operating costs, long term maintenance cost reduction, and compliance to state ventilation laws. (H. H. C.)

196 Darby, F. C.
SCHOOL SITE SELECTION
1956 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 7 pp.

Lists steps in obtaining sites: (1) determining need, (2) designation of area, (2) locating property and, (3) recommending site to school board. Various methods for acquiring sites include: (1) realtors, (2) donations, (3) site condemnation, (4) expanding, and (5) price determination. (H. H. C.)

197 David, Edward E., Jr.
THE REPRODUCTION OF SOUND, Monograph No. 3993
Scientific American
415 Madison Ave.
New York, New York September 1961, 10 pp.

A study of system designs to record and reply complex sounds and its implications for the acoustical engineer. The technical characteristics of sounds recreated to satisfy the peculiar requirements of the human ear and brain are analyzed with reference to: (1) characteristics of sound waves, (2) origins of sound reproduction, (3) the use of transducers, (4) perspective and ambience characteristics. Sound frequency graphs and diagrams are included. (H. H. C.)

198 A DIVISIBLE AUDITORIUM/BOULDER CITY, NEVADA
Educational Facilities Laboratories
477 Madison Avenue
New York 22, New York. 1962, 24 pp.

A report on a wedge-shaped building at Boulder Colorado, in answer to the problems of bulging enrollments and newer teaching methods. The building includes public areas, generous lobby and display space at the wide end, and a stage at the narrow end. Soundproof operable partitions automatically divide the central seating area into three independent spaces suitable for large group instruction. Emphasis is placed on the importance of careful choice of air conditioning system and audiovisual equipment. Sound isolation charts and drawings are included. (H. H. C.)

199 Douthitt, Ira Arthur
A STUDY OF THE PRESENT STATUS OF CLASSROOM FURNITURE IN SELECTED SCHOOLS
University of Tennessee
Knoxville, Tennessee. September 1962, 191 pp. University Microfilms 62-3924

Criteria were developed relative to the following qualities: (1) Flexibility, (2) Comfortableness, (3) Attractiveness, (4) Ease of Maintenance, and (5) Safety. Criteria met by the furniture appraised in selected classrooms were as follows: three classrooms met all criteria; fourteen classrooms met five criteria; fifteen classrooms met four criteria; seventeen classrooms met three criteria; and one classroom met only two criteria. Criteria not met by the furniture appraised in selected classrooms were the following: twenty-seven classrooms did not meet the Flexible criterion; forty-three classrooms did not meet the Comfortable criterion; eighteen classrooms failed to meet the Attractive criterion; one classroom did not meet the Ease of Maintenance criterion. The Safety criterion was met by all classrooms. (T. E. J.)

200 Educational Facilities Laboratories
EFL COLLEGE NEWSLETTER, NO. 5
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York 10022. October 1964, 16 pp.

The following topics are discussed: (1) Computer Masterminds Space Needs, Construction Costs cut by 3 Million Dollars, (2) Dormitories with a Difference, (3) Library Planning Expertise Boosted, (4) Dick Tracy Device for Libraries to Foil Biblioklepts, (5) School Carpeting with No Down Payment-Pay Only Maintenance, (6) Found: A New Remedy for Hot Classrooms, (7) Academic Four-Quarter Time, (8) Total Energy: A Way to Controlled Environment at Controlled Cost. (9) Fieldhouse Gets a Grassy Floor, (10) Electronic Age Learning Center. In each of the above articles EFL staff members identify some of the major problems, cite solutions being utilized and city campuses, plants, and products where the problems and solutions can be observed. Emphasis is placed on the need for America's colleges to innovate and experiment. (R. F. T.)

201 EQUIPMENT GUIDE FOR CLASSROOM TELEVISION
Commerical Electronics Division of Sylvania Electric
Products, Inc.
730 Third Avenue
New York, New York. 35 pp.

Summarizes the use of television and other electronic equipment as teaching devices. The main aspects covered are: (1) its background and accomplishments, (2) how television is transmitted, (3) some of the equipment requirements, (4) the facilities within the school which should be prepared to accommodate the use of television in the curriculum, (5) installation of equipment, (6) the number of transmitting and receiving points, (7) the location of the equipment within the classroom, (8) lighting for television, (9) school to school transmission, and (10) overhead cost of maintenance and personnel. (H. E. J.)

202 EXCELLENCE AND ECONOMY
American Carpet Institute
New York, New York. 1965, 34 pp.

Through photography, charts, and diagrams some of the advantages of carpet are shown: the superior acoustical qualities of carpeted classrooms; the ease and economy with which a carpeted classroom can be maintained; and the intangible quality of its aesthetic value. The description of the 1958 Shaker High School experiments includes statements by the principal, teachers, the acoutical evaluation of Professors Harry E. Rodman and Carl J. Kunz, Jr., of Rensselaer Polytechnic Institute, and the maintenance study carried out by Industrial Sanitation Couselors. The description of the Peter Pan School of Andrews, Texas, includes the advantages of carpeting and its use in this school and the comparative nine-year cost survey with four non-carpeted schools. Carpeting in the Andrews High School of Andrews, Texas, in 1963, an open plan school, served an acoustical purpose not possible with any other material. (M. W. B.)

203 FLOORS: TECHNICAL DATA 1966-1967 FOR INTERIOR DESIGNERS
Armstrong Cork Company
Lancaster, Pennsylvania. 1966, 152 pp.

Presents technical data on Armstrong flooring materials. Materials are shown in their actual colors. All types of floor material are discussed. Information presented includes (1) comparative data on Armstrong resilient floors, (2) chemical resistance, (3) criteria for selection of resilient floors, (4) resilient flooring vs. carpet, (5) gauges of resilient flooring, (6) relative cost, (7) light reflectivity, (8) the effects of radiant heating and air conditioning, (9) resilient floors over concrete, (10) inspection and installation, and (11) maintenance. (H. E. J.)

204 A FRESH LOOK AT FLOORING COSTS: A REPORT ON A SURVEY OF USER EXPERIENCE COMPILED BY ARMSTRONG CORK COMPANY
Armstrong Cork Company
Lancaster, Pennsylvania

Armstrong produced this booklet as a repudiation of the American Carpet Institute's booklet, Cutting Costs With Carpet, with a point by point analysis to demonstrate that "carpeted floors cost more to install and maintain than resilient floors." Armstrong's "Survey of User Experience" involved 112,760,000 square feet of resilient and 572,000 square feet of carpet in a variety of types of buildings in eight cities. From this study, Armstrong found: (1) The average installed cost of carpeting is 3.64 times as high as the installed cost of an average of six types of resilient floors, (2) The service life of carpet is less than half that of resilient floors, (3) Maintenance costs of carpeted floors are almost double the maintenance costs of resilient flooring, (4) The total annual use cost of carpet is 2.71 times as high as that of resilient floors, in contrast to the ACI claim that carpet costs are 4.7% to 47.6% lower. The findings of four other studies are quoted and the booklet concludes with a brief discussion of the acoustical value of carpet. (J. H. R.)

205 Garrett, Joe B.
CARPETING IN DORMITORY AND DINING AREAS
American Carpet Institute
New York, New York. February 1965, 6 pp.

Discusses the evolving use of carpet in dormitory and dining areas. Major conclusions were: (1) Maintenance of the facility at the floor level normally accounts for 40 percent of the total maintenance dollar. (2) There will be less spillage of any kind when carpet is used. (3) Carpeting is more economical to maintain and care for than tile. (4) Carpet is safer than other type floors. (5) Carpets are warmer. (6) Multiple cleaning operations requiring skilled maintenance help associated with traditional hard surface floors are eliminated. (7) Carpets can be used to reduce the cost of renovation. (H. E. J.)

206 Gibson, Charles D. et al.
SCHOOL LIGHTING
School Board Journal
233 Central St.
Evanston, Illinois. 1965, 50 pp.

A collection of articles which together cover most of the current philosophies and concerns in school lighting. Included are discussions of the application of the extensive research in lighting to today's school problems, the Michigan windowless school experiment, the need to consider maintenance during the planning specifying of equipment, Dr. Blackwell's basic research in quantity and quality of light for various visual tasks, how automated lighting can provide protection for school buildings at night, the design of a ceiling which integrates lighting, air distribution and acoustics, expanding glass areas in school buildings to provide more natural light, special considerations for planning lighting in the auditorium, planning lighting for the overall school site, and relighting old schools. (A. C. G.)

207 Gibson, Charles D.
HOW GIBSON'S WHEEL MEASURES LIGHT
Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. September 1964, pp. 55-57.

An exploration of the application of a graphic analysis to a visual evaluation of either a proposed design or an existing space. It is the job of a school administrator to prepare a set of "performance specifications" for each of the five basic building factors, spatial, thermal, visual, conic and aesthetic, from which the architect is to create a building which accomplishes those results. The Gibson wheel consists of 5 concentric circles and 10 equidistant radii. The graph consists of plotting on each radius a factor of the visual evaluation. Scoring ranges from 0 in the center to 5 on the outside circle. The factors scored are (1) Daylight Brightness, (2) Electric Light Brightness, (3) minimum Brightness, (4) Reflectance, (5) Lighting Level, (6) Audio-Visual, (7) Maintenance, (8) Operation, (9) Capital Cash, and (10) Design Integration. The more nearly the graph approaches the outside circle, or (5), the better the rating of the balance. After such an evaluation is made, the schoolmen responsible for the dollar judgments on a building project can determine whether they want to put more or less of their available dollars into creating a good design balance within one specific building element or create a better overall design balance among the several basic design elements. (J. H. H.)

208 Gilmore, Henry Martin, Jr.
THE RELATIONSHIP BETWEEN NEW INSTRUCTIONAL PROGRAMS AND CERTAIN SELECTED FLEXIBLE FEATURES OF SCHOOL BUILDINGS
University of Washington
Department of Printing
Seattle, Washington. 1965, 181 pp. University Microfilms 65-11,462

The stated purposes of the thesis were (1) to determine the manner in which new instructional programs utilized flexible features, and (2) to determine the manner in which the flexibility of school buildings was a factor in the establishment and development of new instructional programs. Conclusions indicate flexibility is needed in new programs and that development of new programs need flexibility. Eighteen recommendations include continuous floor and ceilings, large spaces, individual study spaces, movable partitions, and non-load-bearing walls free from utility lines. (J. H. H.)

209 Ginn, Hugh
SOME THINGS THE BUSINESS MANAGER SHOULD KNOW ABOUT TELEVISION
Proceedings Forty-fourth Annual Convention
Association of School Business Officials of the United States and Canada
2424 West Lawrence Avenue
Chicago, Illinois. 1958, 15 pp.

Presents a brief sketch of governmental trends for encouraging educational television. Implications and considerations for school district managers were discussed as a result of experiences with educational television in the Oklahoma schools. Major areas discussed were: costs involved with the operation and installation of television studios, equipment, and technical personnel. (H. H. C.)

210 Hyde, Frank
A REPORT ON EXPERIENCES WITH CARPET IN THE CLASSROOMS
Andrews Independent Schools
Andrews, Texas. 7 pp.

Summarized the background and planning procedures that preceded the installation of carpeting in the Andrews Schools, Andrews, Texas. Includes carpet specifications, carpet upkeep comparisons, and several pages of teacher and student comments concerning use of carpeting in the schools. (H. H. C.)

211 Grayson, Ernest C.
SOME THOUGHTS ON SAFETY SOURCES
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 5 pp.

Reports need to coordinate safety program of the school. Experiences of a coordination attempt and some practical results from experience within the Jefferson County Public Schools, Kentucky are discussed. (H. H. C.)

212 Green, Alan C. and others.
EDUCATIONAL FACILITIES WITH NEW MEDIA
Rennselaer Polytechnic Institute
Troy, New York. December 1965, 55 pp.

As a technical guide the information in this Report C is divided into five parts. Part I serves as an introduction to several general concerns: planning for obsolescence, change, expansion, and compatability of equipment. Parts II and III deal respectively with environmental factors of lighting, acoustics, and climate. Part IV covers the complex problem of designing projection systems which necessitates the proper relationship among projector, screen, projection material, viewing area, and lighting conditions. Part V discusses some of the other hardware of media which must be considered for the proper planning and design of educational facilities with new media. (H. E. J.)

213 Greer, J. H.
WINDOW SELECTION AND MAINTENANCE
Proceedings of the School Facilities Conference
University of Houston
Houston, Texas. March 1961, pp. 24-27.

Window selection should be based on the general purpose the window is to serve and its maintenance requirements. Criteria are presented on the purpose and maintenance for window selection. Weather-stripping is discussed along with the advantages and disadvantages of different types of windows such as the (a) projected window, (b) the double-hung or single-hung window, and (c) the sliding window. The architect should make a detailed study of the windows best suited to the project and provide specifications for each window....and not leave the selection to the general contractor. (A. B. G.)

214 Greeley, Charles M.
EDUCATIONAL AND SOCIAL VALUES OF ACOUSTICAL TREATMENT
IN SCHOOLS
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 2 pp.

Values of acoustical treatment in schools summarized: (1) fire retardant, (2) ease of maintenance, (3) light reflective values, (4) decorative, (5) installation savings, and (6) insulation savings. Acoustical flooring (carpeting) is discussed with reference to its aesthetic values and costs. (H. H. C.)

215 Hahn, Clyde L.
THE FIRE PROTECTION PROGRAM IN THE BOULDER PUBLIC SCHOOLS
1960 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 4 pp.

Summarizes the merits of (1) automatic detection systems, (2) sprinkling systems, (3) stairwell enclosures, and (4) fire escapes within the Boulder County, Boulder, Colorado School District. The program was used to improve fire protection in fourteen buildings in the district. (H. H. C.)

216 Harris, Al and Caudill, William W.
AN ANALYSIS OF TWO MULTI-PURPOSE CORRIDOR TYPES
Research Report No. 4
American School and University.
737 3rd Ave.
New York, New York. 1955-56, pp. 409-36.

School planners, in their search for economy through the maximum utilization of space, have seen fit to make use of the multi-purpose corridor. By making the corridor work for education, great savings in construction costs are claimed. This report is an attempt to answer the question: Do these multi-functional corridors really do their job, and do it well? The double-loaded and single-loaded multi-purpose corridors, two of the basic types, are in operation in elementary schools in the Clinton School District of Clinton, Oklahoma. The report has photographs and line drawings of these schools. It also includes a description of each school, function of the corridor, and teachers' comments. The article states these general conclusions: (1) corridor space has educational practicableness; (2) double-loaded multi-purpose corridor plan has many merits in connection with GENERAL school activities; (3) single-loaded multi-purpose corridor plan has much merit in connection with EXPANDED classroom activities; (4) both plan types are equally good provided their use is in accord with their intended purpose. (M. W. B.)

217 Hensarling, Paul R.
GLASS WALLS AND THE INSTRUCTIONAL PROGRAM - Research Report 7
American School and University.
737 3rd Ave.
New York, New York. Vol. 27, 1955-56.

A report on elementary schools, in Port Arthur, Texas, planned and built to literally bring the "outside in." This was accomplished with the liberal use of glass, rejecting the conventional classroom style of the past. After two years in operation, a survey was made among the teachers, students, parents, and principals who use the building to answer the major question: Does the extensive use of glass surfaces in school building construction HELP OR HINDER the instructional program? These schools probably contain more glass surfaces than any other schools in the nation and have been appropriately called "showcase schools." This report answers the following questions and other related questions that have been stirred up from the unusual design of the buildings: (1) what are the advantages and disadvantages of such extensive use of glass? (2) how do children respond to "outside" activities which are visible from the classroom? (3) what are the teachers' personal reactions to the open type classroom? (4) have school patrons accepted the change? (5) what about economy, maintenance, and safety? The report contains photographs of the building and classrooms in use and lists ten conclusions. (M. W. B.)

218 Hickey, Thomas Gordon
UNIVERSITY OF MIAMI'S MEALTIME SHOPPING CENTER
American School and University
737 3rd Ave.
New York, New York. May 1966, 2 pp.

Reviews a section of the University of Miami's, Coral Gables, Florida, newly enlarged student union building - "shopping center" cafeteria. A large semicircular serving area has food stations along the outer and inner perimenters. The outer perimeter contains the salads hot foods, and cashier's station. The inner perimeter is one of the salad-dessert serving counters and various beverage stands. There are three private dining rooms, and several separate snack bars. At the University of Miami contract food management service has been able to offer many types of food service to provide complete dining coverage for the school. Photographs are included. (H. H. C.)

219 Hill, Raymond
THE LOS ANGELES SCHOOLS COMMIT ARSON FOR RESEARCH
1959 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 16 pp.

Findings of controlled experimental fires in the Los Angeles school system. Results or findings of how fires behave in open-stairway school building and how various types of mechanical fire prevention devices behave are summarized. Such devices as automatic fire detection systems, smoke-sensitive detection, automatic sprinklers, flameproof paints, and automatic heat vents were tested. Summary and comments on each device's effectiveness are provided. Questions and answers are included. (H. H. C.)

220 Hollweck, Lawrence V.
AN OVERVIEW OF EDUCATIONAL TELEVISION
Radio Corporation of America, Educational Service
Camden, New Jersey. 1965, 2 pp.

Summarizes the specific advantages of ETV as reported by the Washington County, Maryland five-year study. Other topics discussed are: (1) What types of ETV programing should be implemented? (2) What types of ETV transmission should be used? (3) Noncommercial transmission; (4) What television equipment? (5) Comparing costs; and (6) Operating cost problems. (H. H. C.)

221 HOW PARMA BUILT A SPACE-AGE SCHOOL AND SAVED A
MILLION DOLLARS
The Nation's Schools
1050 Merchandise Mart
Chicago, Illinois September 1962, 7 pp.

When a school district builds a second high school for a million dollars less than it spent eight years earlier for its first secondary school that is news. This is a case study of the 2000-student Valley Forge High School of Parma Heights, Ohio, a Cleveland suburb. Occupied last September, Valley Forge cost the taxpayers less than $4.2 million dollars, including site development, fixed equipment, certain supplies, and fees. The savings at Valley Forge were effected through functional design providing for the multiple use of many areas and by the use of large quantities of standard materials. Both buildings were designed by the same architectural firm. Structural economy includes: a modular arrangement of steel columns; lower than usual ceilings; and a more compact building with less perimeter wall. The following procedures also contributed to a lower cost for the new high school: interior walls in most areas were of painted concrete blocks rather than plaster; use of the auditorium lobby as part of the corridors system; use of one side of the cafeteria for through traffic thus saving the cost of a separate corridor; a balcony in the gymnasium serves as a physical education station; regular washrooms near the gymnasium-auditorium used for visitors; and the multi-use of the cafeteria area. The reported construction cost of this building was $13.77 a square foot. (M. G. C.)

222 Illuminating Engineering Society
AMERICAN STANDARD GUIDE FOR SCHOOL LIGHTING
National Council on Schoolhouse Construction
East Lansing, Michigan. 1962, 40 pp.

A revision of the 1948 American Standard Guide for School Lighting, this publication is the result of the efforts of a joint task committee representing the American Institute of Architects, the Illuminating Engineering Society, and the National Council on Schoolhouse Construction. Beginning with a statement of the problem, attention to the goals of a satisfactory visual environment, and a description of the variables involved, the publication continues with examples, applications to specific problems, and references to research in the field. Systems of illumination, their proper maintenance and design procedure, are covered. A wide range of pictorial and graphic illustrations, coupled with an extensive bibliography, make this a highly useful document. Of particular value is the intensive background treatment of illumination problems and experiments contained in Appendixes A through D. Included is a section defining basic terminology essential to an understanding of the field. A subject index is supplied. (C. B.)

223 Johnson, Bettye Underwood
A STUDY OF COLOR IN THE CLASSROOM ENVIRONMENT
University of Tennessee
Knoxville, Tennessee. November 1963, 132 pp. University Microfilms 63-6655

Findings of this study indicated that several factors influence color choices for the various schoolhouse areas, but, in general, the following guidelines were set forth: (1) Tints of red, blue, and yellow are suitable for kindergarten and primary areas. Warm tints enhance elementary classroom objectives. (2) Secondary academic classrooms and laboratories, which are settings for close visual and mental tasks, appear to be most appropriately decorated in tints of blue, blue-green, green, gray, or beige. (3) Corridors should provide visual and psychological relief from classroom decoration. (4) In general, guidance will be enhanced by warm tints. (5) Peach, pink, or turquoise is most desirable for serving and dining areas. (6) Cool or neutral colors for gymnasiums and playrooms will offer less distraction and lessen attention to increased body heat due to intense physical activity. (7) Green, aqua, or peach tints will help provide a desirable setting for activities common to the auditorium. (8) In health service areas, green or neutral shades are most acceptable for physical examination areas while yellow or pink provides a psychological lift for sick bed areas. Other implications were: (1) The prime factor in color choice should be the provision of an appropriate learning environment to enhance the mental, physical, and emotional well-being of the occupants. (2) Selection of colors for the school facility should be individualized to suit the particular school under consideration, taking into account all its unique features. (T. E. J.)

224 King, Jonathan
CARPETING
Educational Facilities Laboratories
477 Madison Avenue
New York, New York. September 1965, 3 pp.

The following observations on carpeting have been made: (1) While carpeting absorbs sound, it does not absorb as much as does the better quality acoustic tile. (2) The initial cost of carpeting is higher than other floor coverings. (3) There does not seem to be any conclusive information on carpeting maintenance costs. (4) Wool carpeting resists soiling far better than the synthetics. (H. E. J.)

225 Kinne, W. S. Jr., Director
HORIZONTAL AND VERTICAL CIRCULATION IN UNIVERSITY INSTRUCTIONAL AND RESEARCH BUILDINGS
University Facilities Research Center
University of Wisconsin
Madison, Wisconsin. November 1964, 19 pp.

A research project conducted to better understand the relationship of stairs, corridors, elevators, and escalators to the cost of high-rise university buildings since corridors and stairs account for approximately 20 percent of the gross area of a college building. It was recognized that data for transient classroom population varies from that of stable research or faculty office buildings, and also that intra-building traffic varies from inter-building traffic in regard to time required. The study suggests a formula for determining the "break-even" point in sacrificing land to height. Findings include 1,000 square feet of corridor space for each 250 seats in the classrooms or 4 square feet per station. Waiting space for elevators should be equivalent to sum of the areas of the cabs. Staggering class schedules reduces loads on corridors, elevators, etc. In multi-story college buildings, research and office facilities should be located on upper floors and classrooms spaces on lower floors. (J. H. H.)

226 Larson, C. Theodore
THE EFFECT OF WINDOWLESS CLASSROOMS ON ELEMENTARY
SCHOOL CHILDREN
University of Michigan
Ann Arbor, Michigan. 1965.

A case study of two schools, one with windows, and the other without windows. Children in test school showed little personal interest in whether their classrooms had windows or not. A windowless environment may have some small effect on learning achievement depending on the nature of the group and whether the class is task oriented. A positive finding indicated that teachers preferred windowless classrooms after they had the experience of teaching in such an environment. (P. J. O.)

227 LIGHTING FOR EDUCATION
Holophane Company, Inc.
1120 Avenue of the Americas
New York, New York. 1965, 55 pp.

The essentials of school lighting design are outlined using the current American Standard Guide for School Lighting and the accumulated six decades of lighting by Holophane engineers as sources of information. The relations between illumination and comfortable vision are discussed in simple terms. The visual aspects are weighed in terms of practical economics: the cost to install and maintain a school lighting system. A large portion of the publication is devoted to lighting layouts. Condensed cost analyses have been computed. (H. E. J.)

228 Litchfield, Lawrence
CONTEMPORARY BUILDINGS ON THE TRADITIONAL CAMPUS
American School and University
737 3rd Ave.
New York, New York. May 1965, 5 pp.

A discussion of the problem of designing new buildings for an old campus and the problems and solutions worked out by the author on four New Jersey campuses: Drew University at Madison and Peddie School at Highstown with predominant styles of Georgian and Federal architecture; Monmouth College at West Long Branch used a central core of one building that dominated the campus and of twentieth century eclectic architecture; and the fourth was Centenary College for Women at Hackettstown with Palladian buildings and supplemented by two contemporary buildings. In order to keep harmonious relationship with the older buildings, many designers have emulated the older buildings and this has proved unsuccessful. (M. W. B.)

229 Ludwing, Marilyn E.
SCSD: REPORT FROM THE FIELD
The American Institute of Architects
1735 New York Avenue
Washington, D. C. January 1966, 4 pp.

Describes the design of the Barrington Middle School in Barrington, Illinois, which was built according to the specifications of the School Construction Systems Development Project. The program at Barrington calls for "modular scheduling," with multiples of a basic half-hour time module being substituted for the traditional 42- or 57-minute class period. There are no conventional corridors in the classroom wings. Traffic moves along the perimeter of the open-end classrooms. Other outstanding features of the school are presented and floor plans are included. (H. E. J.)

230 MacConnell, James D. and Odell, William
PLUMBING FIXTURES FOR EDUCATIONAL PURPOSES
School Planning Laboratory, School of Education
Stanford University
Stanford, California. 1959, 43 pp.

Major areas of concern are: (1) types and kinds of school plumbing fixtures; (2) educational justification for special installation; (3) the ratios of fixtures to school enrollments, particularly as regards group installations. The study as reflected by interviews in twenty states, attempts to state in an organized, logical manner the needs of the various educational programs and grade levels within the American school system with respect to plumbing fixture installations. The investigation is concerned with current practice and standards and concentrates on school personnel--teachers, principals, superintendents, directors of maintenance, and others. (H. H. C.)

231 MANUAL OF PLANNING STANDARDS FOR SCHOOL BUILDINGS - MATERIALS
University of State of New York
Division of Educational Facilities Planning
Albany, New York. January 1965, 6 pp.

Contains the minimum specifications for materials to be found on the interior and exterior of a school building. It places the responsibility for the selection of materials with the architect or engineer and states that the material must be selected assuring fire-safe conditions, economical and efficient operation and maintenance, and with possible savings on insurance rates. (M. W. B.)

232 McKay, Ronald L.
HOW TO KEEP NOISE AT THE RIGHT LEVEL
The Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. November 1964, pp. 64-67.

The author poses seven questions and presents viewpoints often overlooked in planning truly functional school facilities. (1) Does your auditorium require a stage house? Why not build auditorium and performing platform within the same space and under the same continuous ceiling? (2) What about auditorium floor slopes? Steeply sloped floors permit better view of stage and better hearing. (3) How high is the ceiling? A good rehearsal room for large musical groups must be at least 15 feet high--preferably 20 to 25 feet. Ten feet for speech is adequate but would be inadequate when partitions are open. Auditoriums 90 feet deep require 25 feet or more ceiling height. Room volume or height is vital to reverberation. (4) Are functional items mislabeled as luxuries? Carpeting, upholstered chairs, etc., are often compromised with resultant loss in comfort and acoustical quality. (5) Will your school's sound amplification system be an afterthought? Nearly all the best auditorium sound systems employ a single group of directional horn loudspeakers mounted above and slightly forward of center forestage. Controls are located in a booth at rear of room behind a large open window. Acoustical design must be incorporated in architectural design. (6) Have you blocked all sound paths? Sound may be transmitted, not only through intervening walls or floors but also along any interconnecting structure or sound path. Sound will follow the weakest link. (7) When is a little noise a good thing? Air flow over diffusers, regulators,or grills may be useful in offices, classrooms, etc., but not in an auditorium or other large space for hearing. (J. H. H.)

233 McLeod, John W.
MATERIALS AND CONSTRUCTION NEEDS FOR FUTURE EDUCATIONAL FACILITIES
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 3 pp.

In the United States, few of the materials used in school construction have been designed specifically for that purpose. The author examines the British CLASP system of school planning which is an effort to take advantage of mass production, modular coordination, and buying in quantity. It is suggested that there is a need for closer cooperation among industry, architects, and educators in this country, and a nonprofit, national building products test station is proposed. (H. H. C.)

234 MANUAL OF PLANNING STANDARDS FOR SCHOOL BUILDINGS -
STRUCTURE AND BUILDING SAFETY
University of State of New York
Division of Educational Facilities Planning
Albany, New York. January 1965, 13 pp.

Contains the minimum specifications for a school building and states "no construction materials shall be used and no type of construction shall be permitted which would endanger the health, safety, or comfort of the children of the school." Specifications for corridors, exits--with formulae for various assembly rooms, door hardware, doors (size, fire doors), stairways, stairway exit enclosures, fire and smoke control, provisions for the physically handicapped, shower room areas, escape windows, and safety devices for window cleaning. (M. W. B.)

235 Mattice, Doug
WOOD FLOORING
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 3 pp.

Review of the types, quality, and difficulties involved with installation of wood flooring. Several methods for securing and maintaining the appearance and use of wood flooring are summarized. (H. H. C.)

236 MICRO LINK - YOUR GUIDE TO BETTER ETV
Micro-Link Systems
Copiague, New York. 20 pp.

Survey of factors which can improve educational television by use of 2500 MC multi-channel systems and summarizes topics within the following areas: (1) What can a 2500 MC ITV system do for your classroom and district? (2) How does the 2500 MC system relate to teacher preparation? (3) What are the major component parts of a 2500 MC ITV system? (4) What will an ITV system cost? and (5) How can the school district obtain aid to initiate its own multi-channel ITV system? reference is made to the following districts now using the Micro-Link system: Houston, Texas, Rochester, New York, and Bethpage School District, Long Island, New York. (H. H. C.)

237 Mincy, Homer Franklin, Jr.
A STUDY OF FACTORS INVOLVED IN ESTABLISHING A SATISFACTORY THERMAL ENVIRONMENT IN THE CLASSROOM
University of Tennessee
Knoxville, Tennessee. March 1962, 405 pp. University Microfilms 61-6733

In this study thermal conditions in 27 classrooms located in 9 different schools were examined. Major findings of the study included: (1) 44 percent of all classrooms' working area air temperature readings were above 75 degrees F., the upper limit of the criterion range, while only 2.1 percent of the readings were below 70 degrees F., the lower limit of the criterion range. The highest reading within the total confines of a classroom was 100 degrees F. Only 6 of 27 classrooms met completely the criterion pertaining to air temperature. Five of the six were classrooms using unit ventilators for heating and ventilating. (2) More classrooms failed to meet the mean radiant temperature criterion than any other criterion, due to the fact that the mean radiant temperature often rose above the air temperature and outside the optimum temperature range. Most of the high mean radiant temperatures were produced by sunshine on window glass. (3) The mean classroom relative humidity was with the criterion range on 15 of the 27 days of the investigation. The mean relative humidity fell below the minimum criterion limit of 40 percent in 11 classrooms, while only 1 classroom registered a relative humidity above the upper criterion limit of 60 percent. (4) The need for more adequate ventilation was found with 14 of the 27 classrooms overheated and 5 rooms containing objectionable odors. No perceptible odors were found in any of the classrooms employing unit ventilators. (5) Air movement within the selected classrooms ranged from no perceptible movement to 100 feet per minute; mean vertical temperature differentials from the floor to the ceiling ranged from 0.85 degrees to 12.53 degrees F., while mean horizontal temperature differentials at 30-inch level of the classroom ranged from 0.45 degrees to 2.67 degrees F. (T. E. J.)

238 Moldenhauer, E. H.
FACTORS INFLUENCING APPLICATION OF CLIMATE CONTROL
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 3 pp.

Report on factors involved in application of climatic control in the Fulton County Schools, Atlanta, Georgia. Results of findings are: (1) the life expectancy of the building would influence the recommendations as to whether considerations should be given toward air conditioning the structure, (2) estimated cost of new heating and cooling system, (3) requirements for installing solar screens, insulation in the attic, plus other building modifications, etc. (H. H. C.)

239 MODERN STEEL-FRAMED SCHOOLS
American Institute of Steel Construction
101 Park Avenue
New York 17, New York. 42 pp.

Ten schools including elementary, junior high, secondary, and college, are described in detail including pictures, data sheets, floor plans, and costs. The focal emphasis is on why steel should be used in framing school buildings (1) it cuts the time and cost of construction; (2) it is enduring; (3) it fits a low budget; (4) it lessens fire hazards; (5) it works well in design for beauty; (6) it requires little maintenance. (A. B. G.)

240 MONROE COMMUNITY COLLEGE - CAMPUS PLAN
Caudill, Rowlett, and Scott
3636 Richmond Avenue
Houston, Texas. 105 pp.

Presents plans and specifications for Monroe Community College. Areas discussed are (1) scope of the program, (2) enrollment projections, (3) instructional spaces, (4) support and administrative areas, (5) program implications, (6) the site, (7) climate, (8) utilization, (9) recommended plan (10) educational organization, (11) land use, (12) circulation and parking, (13) utilities and drainage, (14) architectural character, (15) cost estimation, and (16) implementation. (H. E. J.)

241 Neilson, Donald W.
SWIMMING POOLS FOR SCHOOLS
School of Education, Stanford University
Stanford, California. 1954, 43 pp.

Monograph presents and discusses school swimming pools within the following areas of organization: (1) swimming in the educational program, (2) organization of the swimming program in the schools, (3) design specifications for school swimming pools, (4) caring for swimming pools, (5) health and legal requirements. (H. H. C.)

242 NEW CAMPUSES FOR OLD: A CASE STUDY OF FOUR COLLEGES THAT MOVED
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York. February 1966, 24 pp.

A report of an investigation to determine what the decision to move means to an institution economically, socially, and physically. Four colleges who had moved their campuses were studied to answer questions posed by a college that was considering moving. Campus plan drawings are included. (H. H. C.)

243 New Jersey State Department of Education
SMOKE SIGNALS
State Department of Education
Trenton, New Jersey. 16 pp.

A pamphlet presenting recommended procedures to use in school fire safety. New Jersey requirements concerning training and inspection, building safety, inspection reports, and board of education inspection and report are summarized. (H. H. C.)

244 Olgyay, Victor
AN EVALUATION OF EXTERNAL SHADING DEVICES
Educational Facilities Laboratories
477 Madison Avenue
New York, New York. 1963, 6 pp.

Presents several graphs and charts to determine the transmission of radiation and heat. The effects of different materials on the transmission of heat and radiation are discussed. An evaluation of solar protection methods for external devices is also made. Information is given concerning the effects of colors on the transmission of heat and radiation. The proper location of shades for the best protection is discussed. (H. E. J.)

245 Ostenberg, Joe W. and John A. Shaver
SCHOOL AIR CONDITIONING/CASE STUDY MCPHERSON HIGH SCHOOL, MCPHERSON, KANSAS
John J. Nesbitt, Inc.
Philadelphia, Pennsylvania. 11 pp.

A brief overview of the school building survey conducted in McPherson by the Stanford School Planning Laboratory. After a successful bond election, the same planning group developed educational specifications for a new senior high school building. It was decided that the building plan featuring a cluster of hexagons and a round element would be constructed. A feasibility study on various air conditioning systems for McPherson High School was made. Five systems of air conditioning were considered; the system selected included the use of a centrifugal machine as a water source heat and with no cooling tower. The total contract price of McPherson High School including air conditioning was $11.79 per square foot. Included in the document are a floor plan and a detailed breakdown of building construction features and building costs and estimated operating costs for nine months and twelve months. An analysis of construction savings offered by McPherson compact plan as compared to a conventionally constructed school building is included. (R. L. H.)

246 Palmer, Albert Lee
A COMPARISON OF THE COSTS OF HEATING SELECTED SCHOOLS WITH ELECTRICITY, COAL, AND NATURAL GAS
University of Tennessee
Knoxville, Tennessee. January 1964, 137 pp. University Microfilms 64-1111

A study to compare the costs of electricity, coal, and natural gas as energy sources in heating selected school buildings in East Tennessee. The following sub-problems were identified: (1) to develop a general background of information about school plant heating; (2) to identify factors having an influence upon the cost of fuel for heating school buildings; and (3) to determine heating cost using electricity, coal, and natural gas as energy sources. The cost for heating the Harold McCormick School with electricity was $2,383.80 or 14.17 cents per square foot. This amount was 933 percent greater than the cost per square foot for heating the Charles A. Bell School with coal and 273 percent greater than the cost per square foot for heating the St. Jude's School with coal was $561.20 or 1.55 cents per square foot. This amount was 933 percent less than the cost per square foot for heating the Harold McCormick School with electricity and 341 percent less than the cost per square foot for heating the St. Jude's School with natural gas. The cost for heating the St. Jude's School with natural gass was $1,051.30 or 5.29 cents per square foot. This amount was 273 percent less than the cost per square foot for heating the Harold McCormick School with electricity and 341 percent greater than the cost per square foot for heating the Charles A. Bell School with coal. (T. E. J.)

247 Peccolo, Charles
THE EFFECTS OF THERMAL ENVIRONMENT ON LEARNING
Iowa Center for Research in School Administration
University of Iowa
Iowa City, Iowa. 1962, 30 pp.

A report on one of several studies being conducted by the Iowa Center For Research In School Administration and Lennox Industries, Inc., Marshalltown, Iowa. The study is an attempt to learn more about: (1) to what extent the thermal conditions are being controlled in the classroom, (2) the optimum thermal conditions needed for various kinds of learning, (3) whether established standards of comfort based on adult norms and utilized in the classroom are the same for children and adults, and (4) whether public school educators recognize the many factors involved in determining and maintaining an adequate thermal environment. Charts, graphs, and tables are included in this digest. (H. H. C.)

Pena, William A.
248 PREDETERMINATION OF NATURAL ILLUMINATION BY THE MODEL TESTING METHOD
American School and University.
737 3rd Ave.
New York, New York. Vol. 28, 1956-57.

New educational specifications have forced architects toward the use of new and untried architectural forms which result in the following natural lighting dilemma: ·(1) Can the natural lighting performance of school buildings be predetermined before they are actually built? (2) Or do we have to wait until buildings are completed before learning the outcome of our efforts to provide a good lighting environment? (3) Can we take the guesswork out of new and untried natural lighting techniques? Now, natural lighting problems can be engineered accurately with the use of models. Model testing is a quick and economical means of assuring good seeing environments by predicting lighting performance early in the planning stage thereby avoiding costly mistakes. It also gives an architect more freedom in design by providing a measure of assurance to what he can and cannot do with natural light. In using these model tests, the more details that are incorporated into the model, the more accurate the results will be. Such man-made variables as the dimensions of a classroom, the color of the ceiling, walls, and floor, size and location of windows, location of trees and shrubs, and the color and location of screens, streets, walks, and terraces may all have a bearing on the final results. This service is available from the Texas Engineering Experiment Station. (M. W. B.)

249 Pennsylvania Department of Public Instruction
PROCEDURE, PRINCIPLES AND CRITERIA FOR USE IN SELECTION OF SCHOOL SITES
Commonwealth of Pennsylvania
Harrisburg, Pennsylvania. 4 pp.

Criteria include: (1) location, (2) adequacy, and (3) physical characteristics of the site. Within each area recommendations are summarized. (H. H. C.)

250 Pennsylvania Department of Public Instruction
SCHOOL SITE ANALYSIS REPORT
Bureau of Building Construction
Harrisburg, Pennsylvania. 1966, 6 pp.

Report form provides for analysis of school sites within the following areas: (1) general data, (2) physical characteristics, (3) site adequacy, and (4) miscellaneous data. (H. H. C.)

251 **Perkins, Neal Baker**
THE DEVELOPMENT OF CRITERIA AND SCORE CARD FOR USE IN SELECTING LOCATIONS FOR AREA VOCATIONAL-TECHNICAL SCHOOLS
Pennsylvania State University
University Park, Pennsylvania. September 1962, 167 pp. University Microfilms 62-4104

In this study the attendance area scorecard yielded discriminative scores when applied to eight satisfactory and eight unsatisfactory attendance areas. The difference between the mean score for satisfactory attendance areas and the mean score for unsatisfactory attendance areas was found to have statistical significance at the .001 level of confidence. The site selection scorecard, when applied to eight satisfactory and eight unsatisfactory area vocational-technical school sites, also yielded discriminative scores. The difference between the mean score for satisfactory sites and the mean score for unsatisfactory sites was found to have statistical significance at the .001 level of confidence. Based upon a comparison of paired scores recorded for each of the attendance areas used for this study, a .9920 Pearson product-moment coefficient of correlation resulted. When paired scores obtained for each of the sites used for this study were compared, a .9375 coefficient of correlation was obtained. The consistency with which each of the two scorecards produced similar scores for repeated applications was found to have statistical significance greater than that required at the .01 level of confidence. The results obtained from conducting this study serve as a valid and reliable instrument. It was also found that the ten items appearing on the attendance area scorecard and the 33 items appearing on the site selection scorecard would serve appropriately as criteria for the selection of locations for area vocational-technical schools. (T. E. J.)

252 Piercy, Ardis A.
CURRENT TRENDS IN FOOD SERVICE
Proceedings of the School Facilities Conference
University of Houston
Houston, Texas. 1961, pp. 76-77.

Innovations and rapid changes in the preparation and service of food include:

1. Centralized kitchens
2. "Shopping-Center" service; counters hold only one type of food and students can line up at any point. One is found in the student union at the University of Texas
3. Use of multipurpose rooms for dining purposes
4. Increasing use of frozen foods
5. New types of cooking equipment:
    a. small, speedy steam pressure units
    b. breaking down of the integrated kitchen range into its component parts, each at a convenient work height
    c. built-in equipment
    d. portable cooking equipment
6. Vending machines in eating places
7. New type furniture and colors in school cafeterias

(A. B. G.)

253 THE PLANNING OF SCHOOL FOOD SERVICE FACILITIES
School Plant Planning Series
Utah State Department of Public Instruction
223 State Capitol
Salt Lake City, Utah. 1956, 18 pp.

A guide for use by architects and school officials in the planning of physical facilities for school food services. Topics discussed include common elements of good plans, space allowance, the layout and design features. This guide includes a flow chart relating to space organization. Equipment schedules are provided for six different sizes of lunch programs. (E. J. M.)

254 PLEXIGLAS DOME SKYLIGHTS
Rohm & Haas
Philadelphia, Pennsylvania. 1957, 16 pp.

Detailed information concerning structure, types, and properties, and installation procedures are given. The advantages of Plexiglas Dome Skylight are: (1) admits cheerful, healthful daylight into school, (2) eliminates leakage because the dome is a continuous, uninterrupted surface, (3) provides even light distribution in deep rooms, (4) supplies daylight to windowless rooms and corridors, (5) permits better space utilization and flexibility in room layout because fewer windows are needed, (6) requires no special roof construction, due to light weight, and (7) contributes to lower building costs through simplicity of design and installation, reduction in window wall areas, and lower ceiling heights.
(H. E. J.)

255 PLEXIGLAS IN ARCHITECTURE
Rohm & Haas
Philadelphia, Pennsylvania. December 1965, 27 pp.

Presents general design principles and specific design recommendations on the use of plexiglas acrylic plastic sheets for building applications. Its purpose is to encourage the proper use of plexiglas in construction, and to aid architects in designing and preparing specifications consistent with the properties and characteristics of the material. Some of the properties discussed are (1) chemical resistance, (2) breakage resistance, (3) light refraction and diffusion, (4) cementability, (5) design stresses, (6) solar energy and glare control, (7) sheet size and thicknesses, (8) thermal expansion and contraction, (9) weather resistance, (10) weight, and mechanical specifications. (H. E. J.)

256 PLEXIGLAS REPLACEMENT WINDOW GLAZING
Rohm & Haas
Philadelphia, Pennsylvania. December 1964, 8 pp.

Plexiglas acrylic plastic is a rigid, weather-resistance sheet material manufactured by Rohm & Haas Company. It is supplied as a colorless transparent material and in a variety of tints and translucent colors. Several advantages of plexiglas are discussed: (1) heat resistance, (2) chemical resistance, (3) weather resistance, (4) combustibility, (5) thermal expansion and contraction, (6) recommended thicknesses of plexiglas to use for glazing, and transparent tinted plexiglas for glare reduction. Installation and mechanical specifications are discussed. (H. E. J.)

257 Rarig, F. J.
RECENT EXPERIENCES WITH PLASTIC GLAZING FOR SCHOOL WINDOWS
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 4 pp.

The New York City public schools have experimented with plastic glazing in school windows in an attempt to reduce breakage. Most of the demand for plastic materials is for purposes of replacement of broken panes; however, a demand for such materials in new construction is developing. Plastic panels with the elements of endurance, glare reduction, and low heat transmission, as well as the ability to resist shattering in the event of an atomic detonation, have been experimentally installed. An evaluation is made of the performance of acrylic plastic panes, reinforced polyester panels, and butyrate sheets. As a result of experimental installations, several plastic materials have been approved for glazing in New York City schools. (H. H. C.)

258 READ'N--WRIT'N--RITHMETIC WITH PRESTRESSED CONCRETE
Prestressed Concrete Institute
205 W. Wacker Drive
Chicago, Illinois. September 1962, 6 pp.

Discusses the advantages of prestressed concrete in school construction, such as speed of construction, economy, fire resistance, durability, etc. Particular attention is given to the advantages of eliminating load-bearing walls for multi-purpose usage. Movable partitions, and maintenance advantages are the areas summarized. Photographs and diagrams are provided. (M. N. B.)

259 Reeder, Milton and Fogarty, William J.
A COMPREHENSIVE STUDY OF HOURLY AND DAILY SEWAGE FLOW RATES IN FLORIDA PUBLIC SCHOOLS
University of Miami, Department of Civil Engineering
Miami, Florida. 1965, 37 pp.

Determination of the hourly and daily sewage flow rates in Florida public schools and to identify the characteristics of these flows to provide a more precise basis for the establishment of design criteria for sewage disposal facilities for schools. Water flow data were collected for 158 schools and sewage flow data from 42 schools. The findings of the study showed clearly that design criteria currently in use in Florida and many other states are excessive. Recommendations were made for the design of sewage facilities for public schools with a cafeteria and schools with a cafeteria and showering facilities. (C. W. M.)

260 Reid, John Lyon and Fitzroy, Dariel
ACOUSTICAL ENVIRONMENT OF SCHOOL BUILDINGS
Educational Facilities Laboratories
477 Madison Avenue
New York, New York. September 1965, 128 pp.

Concerns acoustics of academic space in schools. Resource for school administrators, architects, and acoustical engineers. The report is based on actual conditions existing in schools throughout the country. The trends in school construction and design are discussed. The major objective of this study has been to determine the minimum acoustical separation that is necessary to allow a group or an individual to work effectively. The findings and conclusions of the report are discussed. Floor plans are included. (H. E. J.)

261 Rogers, Paul Jesse
DEVELOPMENT AND UTILIZATION OF ELEMENTARY SCHOOL SITES
University of Southern California
Los Angeles, California. 1964.

Interview investigation. Recommendations included: (1) site acreage should be based on the type of site and use; (2) a master plan for ultimate development should be established; and (3) the individuals who are to use the school plant should help to plan it. (P. J. O.)

262 Rudner, Morris Jack
A STUDY OF THE EFFECT OF CLASSROOM COLOR ON STUDENT ACHIEVEMENT
New York University
New York, New York. December 1962, 124 pp. University Microfilms 62-5349

The results of this study indicated: (1) Paint manufacturers generally did not keep records of the volume of paint sold to schools. (2) The painting of a classroom did not affect student achievement as measured in terms of student grades assigned by teachers. (3) Color was not a factor in whether the painting of a classroom affected student achievement as measured in terms of student grades assigned by teachers. (4) The hues, values, and intensities of the colors used did not affect student achievement as measured in terms of student grades assigned by teachers. (5) Students' intelligence quotients were not factors when the painting of a classroom did affect student achievement as measured in terms of student grades assigned by teachers. In the total four years covered by the data, the grades of 3,583 high school students were used including the grades of 844 high school students during the year of the painting. The grades of 709 elementary students were involved in the four years studied, including the grades of 177 elementary students during the year of the painting. (T. E. J.)

263 Sansbury, S. S.
PRESENT AND FUTURE STATUS OF ELECTRICITY IN HEATING SCHOOL BUILDINGS
1960 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 16 pp.

Discussed (1) present status of electric school heating, (2) suggestions of mean for comparing heating costs of electricity with fossil fuels, and (3) future trends in electric school heating. Charts, graphs, and case studies are provided as examples within the topics of discussion. (H. H. C.)

264 Schaefer, John W.
INTRODUCTION TO CLIMATIC CONTROL FOR EXISTING BUILDINGS
1965 Annual Proceedings
Association of School Building Officials
Chicago, Illinois. 2 pp.

Advantages of climatic controlled school buildings are: (1) air-conditioned classrooms are becoming a factor in the hiring of teachers, (2) atmospheric environments in classrooms are important to the effectiveness of the learning process, (3) increased year-round utilization of school buildings, (4) school attendance is higher, and (5) outside noises are reduced or eliminated. (H. H. C.)

265 Schlaak, Otto F. and others
SPECIAL ETV REPORT
School Board Journal
233 Central St.
Evanston, Illinois February 1964, 36 pp.

Television has developed into a significant factor the field of education in 400 or more colleges and universities and 800 school systems, with a classroom audience estimated at seven million or more students. This Special ETV Report presents eight "looks" at educational television in articles titled: (1) Educational Television 1964. An overview by the Federal Communications Commission. (2) Milwaukee's ETV Stations Serve the Community. Used by the public and parochial schools and colleges. (3) Closed-Circuit TV in Anaheim City Elementary School District. Provides televised teaching for all pupils in grades four, five, and six. (4) ETV Around the U. S. A. Describes educational television status and operation in 40 states and the District of Columbia. (5) School Board Considerations for the Smaller District ETV System. Some problems here but also some worthy possibilities. (6) ETV in New York State. (7) Closed-Circuit Television-One Answer. Akron University employes extensive use of CCTV and the reaction seems to be "a better job." (8) Illinois in a Quandary Over State ETV Network. Not too much progress because of competition and a complexity of problems. Included are a list of products, catalogs, and booklets concerning educational television. (A. B. G.)

266 Schlossman, Norman J.
HOW TO PLAN A SCHOOL FOR MAXIMUM FIRE SAFETY
The Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. 1963, 3 pp.

A summary of the report "School Fires - An Approach to Life Safety" developed by the Building Research Advisory Board of the National Academy of Sciences. It presents in concise terms, the basic life safety considerations for which the architect and administrator must plan during the design and operation of a new school. Although many of the considerations are included in building codes, this article seeks to develop an understanding of intent which is necessary for successful fire safety. (A. C. G.)

267 Schneider, Raymond C. and Wilsey, Carl E.
SCHOOL SITE SELECTION--A GUIDE
School Planning Laboratory Research
School of Education
Stanford University
Stanford, California. September 1961, 43 pp.

Presents the results of a study to identify factors affecting school sites for the purpose of aiding school administrators, boards of education, architects, engineers, planners, and educational facilities specialists in the formulation of a technique for identifying, analyzing, and rating the various factors affecting school sites. Twenty-five primary factors affecting school sites are identified and include: availability, location, environment, accessibility, size, shape, topography, acquisition, cost of land, soil condition, etc. Within each of the primary factors certain secondary factors are discussed. (H. H. C.)

268 SCHOOL CARPETING FACTS AT A GLANCE
American Cyanamid Company, Fibers Division
New York, New York. 1 p.

A pamphlet providing answers to eight questions concerning the use of carpeting. Answers are based on information provided by the American Carpet Institute, Inc. Questions are related to extent of carpet use in schools, types of carpets used in schools, costs comparison of carpet and other flooring materials, etc. (H. H. C.)

269 SCHOOL FIRES, AN APPROACH TO LIFE SAFETY
Building Research Advisory Board
National Research Council
Washington 25, D. C. 1960, 58 pp.

Reports on procedures that will assist school administrators, school board members, fire protection authorities, fire marshals, building designers, and other responsible individuals and organizations in making the value judgments that are necessary, school by school, and community by community. Topics include: (1) fire, its nature and effects, (2) safety facilities and devices, (3) the schoolhouse, (4) the human element, (5) design for the future, and (6) the need for continuing research. Appendix contains suggested outline of survey report content. (H. H. C.)

270 School Planning Laboratories
SCHOOL BUS FACILITIES
Stanford University
Stanford, California. 8 pp.

A summary of a study of the building needs for school transportation systems undertaken for the Kaiser Aluminum and Chemical Corporation. It outlines the magnitude of school transportation systems as an indication of buildings necessary to house and maintain equipment. The types of areas needed to fulfill the bus housing and maintenance functions, spatial relationships, utilities provisions, cross-sections and schematic drawings are shown. Emphasis is placed upon flexibility and adaptability to local needs. Data were gathered by questionnaire from 200 school districts; by letter from 48 state departments of education; through analysis of bus chassis manufacturers specifications; from interviews with school bus supervisors, shop foremen, and transportation company officials; and from a survey of the literature. (C. B.)

271 SCHOOL SITES, SELECTION AND ACQUISITION
Economy Series, No. 3
State Department of Education
Hartford, Connecticut. June 1960, 12 pp.

This bulletin concerns the selection, acquisition, and development of sites for school purposes. Ideally, site acquisition is planned for several years advance of need. The site serves several educational uses, the location of a school building, physical education, outdoor instruction and recreation for all ages, space for supplementary services such as bus loading, parking, and landscaping, and unforeseen future needs. The concept of the "School-Park" is suggested. Standards for location and selection are suggested which include a complete table of area requirements for games and recreation activities. Many different sources should be explored including, forecasts, community master plans, sale surveys, aerial photographs, highway plans, the architect, and state educational and health standards. (D. O. B.)

272 Schroder, Lawrence Druce
UTILIZATION OF ELEMENTARY SITES IN THE SALT LAKE CITY ELEMENTARY SCHOOLS
University of Utah
Salt Lake City, Utah. November 1961, 263 pp. University Microfilms 61-3351

According to this study the peak free-play use of school grounds occurred during mild, clear weather. When the five spring and five fall lunch-time observations at each of the spacious-site schools were averaged, they resulted in an adjusted range from 285 to 303 square feet per pupil, with a median of 295. The four spring and four fall lunch-time observations at the most crowded sites showed them to be saturated--their largest comparable figure being 185 square feet per pupil. The validity of these results was verified by standard statistical procedures. The physical education program was found to require a minimum of approximately 3.25 acres, depending on the site, for one complete pattern of space and equipment. Using the figure of 295 square feet of free-play area per pupil, this was essentially the same as the playground requirements for a school of 460 pupils having half-day kindergartens. Using all seven periods of the day for physical education made it easily possible to accommodate the program in this space. Because of the weather, lawn areas were usable for regular play on less than one-half of the school days, but black-top was usable almost every day. An essentially level elementary school site of the reasonably regular shapes and proportions possible on city blocks, required approximately seven acres of space to accommodate a 460-pupil, 14-classroom, one-story, elementary school with adequate supporting rooms, and with enough ground to expand to a 700-pupil, 21-classroom, one-story situation with apparently adequate playgrounds containing approximately five acres. (T. E. J.)

273 SCORE CARD FOR SCHOOL SITE
School Building Assistance Commission
Boston, Massachusetts. April 1949, 1 p.

A rating form assisting in the determination of the quality of school site. Items listed include: location, accessibility, size and shape, topography, etc. (H. H. C.)

274 Smith, Donald Charles
VANDALISM IN SELECTED SOUTHERN CALIFORNIA SCHOOL DISTRICTS: NATURE, EXTENT, AND PREVENTIVE MEASURES
University of Southern California
Los Angeles, California. 1966, 354 pp. University Microfilms 66-11,589

Findings: (1) The working concept of what constitutes vandalism varied widely among the districts in this sample. (2) District records of vandalism were usually confined to work orders and insurance claims. (3) Vandal losses-costs in the six budget categories average $6.41 per pupil for the fourty-four districts. (4) The percent of total losses-costs by budget category was as follows: operations - 36, textbooks - 21, maintenance - 19, instructional supplies - 15, library and supplementary books - 8, and pupil transportation - 1. (5) Vandal losses-costs by classification of district showed these per-pupil averages: elementary - $4.08, union high school - $7.11, and unified - $7.60. (6) Average per-pupil losses-costs were 30 percent greater in those districts providing specific data rather than estimations. (7) Recoveries from vandals averaged 28¢ per pupil. (8) A like amount was recovered through insurance claims. (9) Recoveries from insurance were about two-thirds of the premium. (10) Staff security failure and irresponsibility accounted from up to one-third of the vandal incidents in certain categories. (11) Vandal incidents were most numerous on weekends - particularly Sunday afternoons. (12) Spring vandalism exceeded fall vandalism by two to one. (13) Most districts relied heavily on school or district policy, administrative and staff responsibility, new materials and designs, and improved mechanical security for vandalism prevention. (14) Some disenchantment was noted with guards and watchmen, professional patrols, electronic equipment, and mechanical security devices as effective and economical preventive measures. (15) More district contemplated the use of additional security fencing and electronic devices than any other preventive measures. (T. E. J.)

275 SPLIT SYSTEM CLIMATE CHANGER EQUIPMENT
Trane Company
LaCross, Wisconsin. August 1965, 23 pp.

The Split System concept represents a fresh look at large capacity air-conditioning. Instead of being assembled in one big package, components are separated for easier handling, more flexible installation, and better noise control. Only the component which delivers the conditioned air is located in the building. The other components are outdoors where their operating sounds will not disturb building occupants. Several advantages of the Split System are given. Includes tables, drawings, graphs, and mechanical specifications. (H. E. J.)

276 Suddarth, Ray
STEPS TOWARD GOOD FOOD SERVICE
American School and University
737 3rd Ave.
New York, New York. May 1966, 4 pp.

Presents the need to modernize the equipment used in school kitchens since most of the lunch facilities were constructed prior to 1950. Increased school enrollment causes the need for new methods of food handling and new equipment such as convection ovens, vertical cutter/mixer, heavy-duty electric knife. Management has the responsibility to provide the worker with efficient layout and proper training before any school lunch operation can be successful. The use of vending machines has steadily grown in the last 20 years but cost 28¢ per meal more than when student purchases in a cafeteria. Management should use the following criteria to evaluate their programs: (1) over-staffing; (2) lack of good record keeping; (3) poor buying practices; (4) lack of skilled labor and no inservice training for the inexperienced worker; (5) haphazard menu planning; (6) inadequate use of equipment; (7) government donated commodities not being fully utilized; (8) poor planning of inventories. (M. W. B.)

277 SUGGESTED GUIDE FOR SELECTING LARGE EQUIPMENT (SCHOOL LUNCH)
South Caroline State Department of Education
Charleston, South Carolina. May 1963, 7 pp.

Specifications of equipment needed for the school lunch program. The kind and size of the equipment recommended is related to the number of meals served per day. Information is given concerning (1) ranges, (2) sinks, (3) electric heating, (4) gas heating, (5) refrigeration, (6) tables, (7) kitchen machines such as mixers, peelers, meat slicers, and food cutters, (8) truck dollies, (9) scales, (10) storage cabinets, (11) office space, (12) lounges, (13) garbage and can wash areas, (14) delivery areas, and (15) portable serving trucks. (H. E. J.)

278 THERMAL COMFORT REQUIRES ADEQUATE CONTROL SYSTEM
School Board Journal
233 Central St.
Evanston, Illinois. May 1966, 2 pp.

All-year use of buildings requires a thermal environment that is comfortable at all times. Mechanical systems are important considerations in thermal control but so are human bodies, electric lights, window areas, building and insulation material, even shade trees and shrubs outside the building. Three types of temperature controls are defined: electric, electronic, and pneumatic. "When a school has less than 10 thermostats it's cheaper to go electric or electronic." Central control is recommended as an economy feature in any school building but especially in large school buildings or plants. A pneumatic system works best in a compact school but the exact point where such a system will work better than an electric one depends upon the number of controls, control requirements, the building area, and other factors. The selection of any temperature control system should depend upon maximum efficiency and operation costs on the lowest maintenance and fuel costs. (A. B. G.)

279 THERMAL ENVIRONMENT AND LEARNING
Iowa Center for Research in School Administration
University of Iowa
Iowa City, Iowa. 10 pp.

Summary of research on thermal environment in schools and the status of thermal environment and learning research completed and/or underway in the Iowa Center Center For Research In School Administration. Results of summary are: (1) there is a significant positive relationship between the thermal environment in which children work and study and their efficiency in learning, (2) teachers must become aware of thermal conditions, and (3) initial thermal environment studies by the Iowa Center have brought questions for further research. (H. H. C.)

280 TRAFFIC SAFETY PAMPHLETS: WHAT'S AVAILABLE AND WHERE
Insurance Institute for Highway Safety
Washington, D. C. 3 pp.

Pamphlet lists sources of traffic safety material-pamphlets, fliers, brochures, and other publications of a nonpermanent nature. Types of publications listed are directed to the layman, the driver, pedestrian, bicycle rider, civic leader, and safety education student. (H. H. C.)

281 UNIT VENTILATORS, CLASSROOM HEATING, VENTILATING AND AIR CONDITIONING
Trane Company
La Cross, Wisconsin. September 1961, 99 pp.

Lists and descriptions of: (1) heating, valve control, (2) heating and cooling, bypass control, (3) heating, mild climates, bypass control, (4) heating, electric, and (5) shelving, lateral extensions and accessories. Procedures for selection of unit size, unit ventilator size, coil selection, and filters are included with specifications of individual units. There are five basic units: (1) type A unit, a heating and ventilating unit ventilator furnished with mixing dampers; (2) type B unit, a year-round air conditioning unit ventilator; (3) type C, a heating and ventilating unit; (4) type D, a heating and ventilating unit for mild climate application without mixing dampers; and (5) type E, an electric heating and ventilating unit. (H. H. C.)

282 University of State of New York
Division Leaders for Facilities Planning
HEATING AND VENTILATING RECOMMENDATIONS FOR NEW YORK STATE SCHOOLS
State Education Department
Albany, New York 12224. April 1964, 42 pp.

Fundamental objectives to be attained in heating and ventilating school buildings are (1) An environment which will remove the heat produced and not too fast, and (2) An atmosphere free from objectionable microbes, odors, dusts, fumes, and gases. The thermal conditions which should be maintained in various types of rooms (depending on variations in physical activity) are indicated in detail. Listed are certain alternative procedures any of which may meet the situation in a given school. The aim as stated is "to utilize procedures and equipment which are adapted to the specific requirements of a school building and are capable of being effectively operated by the personnel and with the funds which will be available." (T. S. G.)

283 Watters, B. G. and Cavanaugh, W. J.
SPEECH ISOLATION PROBLEMS IN SCHOOLS
Building Research Institute
1725 DeSales St., N. W.
Washington, D. C. 1962, 12 pp.

In modern schools and other buildings, speech privacy has become more of a problem than ever because of lightweight construction and flexibility of space. Case histories of speech privacy show that transmission loss rating is only one of the factors to be considered. Other factors are source room size, source room speech use, background noise level, noise reduction rating of sound-isolating construction, and privacy requirements. A design tool, the Speech Privacy Design Analyzer, has been developed to eliminate the gross errors that can result from conventional design techniques. A field study used to check the design tool is described in detail. (H. H. C.)

284 West Virginia Department of Education
HANDBOOK ON PLANNING SCHOOL FACILITIES
SERVICE FACILITIES
Department of Education
Charleston, West Virginia. 5 pp.

Recommendations for planning school service facilities are made within the following areas: (1) sanitary facilities; (2) electric services; (3) audio-visual facilities; (4) communication and program facilities; (5) custodial service facilities; (6) storage other than custodial; and (7) miscellaneous service facilities. (H. H. C.)

285 White, Robert F.
EFFECTS OF LANDSCAPE DEVELOPMENT ON THE NATURAL VENTILATION
OF BUILDINGS AND THEIR ADJACENT AREAS
Texas A & M College System
College Station, Texas. 1954, 16 pp.

Part of a comprehensive study on how to make the best use of natural light and air in the design of buildings and adjacent areas. Previous studies dealt with the distribution of natural light and the pattern of natural air movement throughout the interior. Models were used to represent buildings, hedges, shrubs, and trees at varying heights and distances from the building. While no specific conclusions are drawn, some considerable evidence was produced to show that: (1) Planting can materially affect the movement of air through and about buildings, (2) Depending on the way it is used, planting may either augment or reduce the natural flow of air through a building, (3) Planting may cause actual change of direction of air flow within a building, (4) Planting on the lee side of buildings has little or no effect on the movement of air through the building unless it is in such a position that it obstructs the outlet openings. The investigation described in the report serve to emphasize the importance of landscape design as a science. (J. H. H.)

286 Williams, Kenneth K.
THE COLLEGE CAFETERIA VS. CONTRACT FOOD SERVICES
1965 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 4 pp.

Suggestions and recommendations for use of the contract basis for purchasing and providing food services. Contract specifications deal with two general areas: (1) facilities and (2) food services. Criteria to consider in contract formulation within these areas are listed. (H. H. C.)

287 Wilsey, Carl E.
SCHOOL SITE COSTS IN A RAPIDLY EXPANDING SUBURBAN AREA
Stanford University
Stanford, California. November 1960, 107 pp.

Purposes of study: (1) to test the hypothesis that cost savings result from early acquisition of school sites, (2) to estimate the dollar savings that may result from early acquisition, and (3) to determine how far in advance of need sites should be purchases. During the period under investigation 106 school sites were purchased by the districts included in the survey, at a total cost of $10,883,292. The estimated average cost of sites increased from $3,934 per acre in 1949 to $10,804 per acre in 1959. A positive correlation was found to exist between site costs and population growth, and between site costs and the development characteristics of land. A low, negative correlation was found to exist between site costs and the number of years in advance of need that sites were purchased. It would seem advisable for districts to borrow money to finance the early purchase of sites, since the initial saving in land cost exceeds the interest cost and tax loss. (T. E. J.)

288 Womack, Darwin Wasson
A STUDY OF FACTORS INVOLVED IN ESTABLISHING A SATISFACTORY ACOUSTICAL ENVIRONMENT IN THE CLASSROOM
University of Tennessee
Knoxville, Tennessee. March 1963, 235 pp. University Microfilms 63-2188

Major findings as determined by the criteria which were used to appraise the acoustical environment: (1) The background noise ranged from a high of 41.3 decibels to a low of 24.8 decibels. (2) Among the subjective ratings, one classroom was rated very quiet; seven were rated as quiet; eight were rated as moderately noisy; eight were rated as noisy; and three were rated as very noisy. (3) Of the 27 classrooms investigated, 8, or 30 percent, met the criterion for background noise. (4) The shortest reverberation time in the classrooms was found to be 0.74 seconds and the longest reverberation time was 2.01 seconds. (5) None of the 27 classrooms completely met the criterion for reverberation time; however, 11 classrooms partly met the criterion. (6) The classrooms which came nearest to the proper reverberatime were those in which ceilings were constructed with either acoustical tile boards or an acoustical roof deck. (7) Extremely long reverberation times were found in the principal corridors of the schools. The range was from 1.0 second to 3.10 seconds. (8) No classroom corridor wall met the criterion for noise reduction. (9) The noise reduction of the corridor walls ranged from a low of 9.0 decibels to a high of 33.0 decibels. (10) Only three between-classroom walls were found to meet the noise reduction criteria. (11) The noise reduction of the between-classroom walls ranged from a low of 26.1 decibels to a high of 41.1 decibels. (12) The difference between the noise reduction performances of the corridor walls and the between-classroom walls were obviously due to the sound leaks and low transmission loss ratings provided by doors and windows. (T. E. J.)

289 Wulliman, James C.
BROADCAST NEWS
MILWAUKEE ETV SYSTEM USES BOTH VHF AND UHG CHANNELS
Radio Corporation of America
Camden, New Jersey. February 1963, 11 pp.

Reviews the organization and programming of Station WMVS, Channel 10, and Station WMTV, Channel 36 in grade and vocational schools, technical institutes and colleges, medical associations and special interest groups in the Milwaukee School System, Milwaukee, Wisconsin. Topics discussed include (1) production and programming facilities, (2) studio facilities, (3) film facilities, (4) mobile TV tape, (5) microwave system, and (6) plans for future expansion. (H. H. C.)

VI. THE BUILDING–INSTRUCTIONAL ROOMS AND SPECIAL PURPOSE ROOMS

290 AMERICAN STANDARD SPECIFICATIONS FOR MAKING BUILDINGS AND FACILITIES
ACCESSBILE TO, AND USABLE BY, THE PHYSICALLY HANDICAPPED
National Society for Crippled Children and Adults, Inc.
Chicago, Illinois. 1961, 11 pp.

Sets forth recommended specification, design, and construction of buildings and facilities that reflect adaptation for usage by individuals with permanent physical disabilities. Definitions of disability types, general principles, site development, and buildings are topics discussed. Specification recommendations are coded. (H. H. C.)

291 Babcock, Ruth E. and others
PLANNING THE SCHOOL LIBRARY
University of State of New York
Albany, New York. 1962, 10 pp.

An aid to the improvement of plans for new buildings and of existing school libraries. Includes sections on (1) location; (2) general considerations; (3) space provisions; (4) reading room; (5) library classroom; (6) conference room; (7) librarian's office; and (8) stack and storage space. A summary table of important factors is included. (T. S. G.)

292 Bartnick, Lawrence P.
DESIGNING THE MATHEMATICS CLASSROOM
National Council of Teachers of Mathematics
1201 16th St., N. W.
Washington, D. C. May 1965, 40 pp.

Booklet is written to give a source list for planning the mathematics classroom as well as suggestions with regard to type, size, and content of the mathematics classroom that will best serve the needs of a modern educational program. Included in this booklet are the following topics: (1) physical features of a mathematics classroom; (2) furnishings for the mathematics classroom; (3) equipment and teaching aids for the mathematics classroom; (4) other facilities; (5) summary of physical features and furnishing; (6) typical floor plans; (7) bibliography. (M. N. B.)

293 THE BING NURSERY SCHOOL--THE CHILD'S VIEW
School Planning Laboratory
School of Education
Stanford University
Stanford, California. March 1966.

Through the medium of pictures, drawings, and words the Bing Nursery School at Stanford University is described. The article contains a plot and floor plan of the facility and pictures showing "the child's view" and "the adult's view." The brief text is devoted to describing the planning program and plant of the facility. (G. R. R.)

294 Bower, Frank
TWO SCHOOLS DESIGNED FOR COMMON SITE
The Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. July 1957, 6 pp.

This is a case study of the new junior-senior high school in Great Neck, Long Island, which is called by the author an example of a modern American high school. The site is a hilly and heavily wooded area of approximately 115 acres. With two fully-equipped auditoriums, four dining areas, and four gymnasiums, one of which contains a natatorium, the architects believe the Great Neck school provides more special facilities than any comparable school in the country. The school plant is a complex of 13 buildings--six for the junior high and seven for the senior high. The school is wrapped around three sides of a hill with the junior high school facilities on one side, the core dining area in the middle, and the senior high school facilities on the other side--thus two schools on a common site. The initial plant was designed to accommodate 1,400 junior high school students and a senior high school of 1,200. Included in the 115 acres is a nine-acre parcel donated to the school district by the late Henry Phipps along with the Phipps mansion, which is presently serving as the headquarters for the school administration. As much of the grounds as possible was retained in its original state of beauty and 15 acres of the site were set aside for nature study classes. (M. G. C.)

295 Bulletin of the California State Department of Education
A GUIDE FOR THE DEVELOPMENT OF LANGUAGE Laboratory Facilities
Bureau of Audio Visual and School Library
Education and Bureau of National Defense
Education Act Administration
California State Printing Office
Sacramento, California. October 1960, 37 pp.

An effort to (1) outline steps which should be taken by schools to meet their needs in planning for the listening-speaking approach to the language program and (2) make clear the provisions needed to permit introduction of new equipment and required adjustments in the program. Section I answers ten questions about language laboratories, ranging from definitions, to advantages and uses, and on to necessary equipment and costs for installations. Section II lists specific factors to be considered in the three levels of language laboratory; listening; listening and speaking; and listening, speaking, and recording. Section III presents five guidelines for establishing language laboratory facilities: (1) Thorough planning is essential; (2) Certain operational decisions must be made early in the planning state; (3) Standards should be used in selecting equipment; (4) Provisions should be made for preparation of pre-recorded tape-lesson materials; (5) Full value from the facility must not be expected the first year. Section IV details the materials and equipment needed in the three levels of laboratory, giving description and approsimate costs. Section V presents references for further study on the topic. (G. R. R.)

296 BULLETIN - VOCATIONAL-TECHNICAL FACILITIES CONFERENCE, 1966
Saxon P. Poyner
Knott Building
School Plant Planning
Tallahassee, Florida. 1966, 64 pp.

A bulletin compiled as a refresher course in planning facilities for vocational education in the State of Florida. The bulletin includes six papers presented at the conference and committee reports on agricultural education; business and distributive education; health occupations; home economics; institutional food services; textile, clothing, and home furnishings services; and support facilities; technical education; trade and industrial education. The committee reports contain many specifics such as spatial requirements, lists of job opportunities, storage needs, and safety features. (P. J. O.)

297 CALIFORNIA SCHOOL BUILDING 1960-1965
Bureau of School Planning
California State Department of Education
Sacramento, California. 1966, 151 pp.

Twenty-five new California schools - seven of which are high schools - are described in this publication. The description contains a location map, an exterior photograph, identifying data, a site plan, and a short paragraph about the building. Included are a floor plan, a brief commentary on outstanding features, and two photographs, usually of interiors. (J. H. R.)

298 Campbell, Edward R., and others
VOCATIONAL AND TECHNICAL EDUCATIO
School Board Journal
233 Central St.
Evanston, Illinois April 1965, 32 pp.

A collection of 11 articles, each dealing with a separate phase of technical or vocational education. Gives a clear picture of the present status of vocational training in our schools, and the need and future of the community college. The main premise of this symposium is that every child is exceptional in some way and has the democratic RIGHT to a quality education. The rapid development and use of automotive devices has curtailed the need for nonskilled laborers and many skilled and semiskilled individuals. Industry, government, labor and local communities must join together in furnishing facilities and faculty for the training and retraining of all persons without jobs, and the tools and machines MUST be modern --- not discarded ones. How this might be done, and why it should be done, are discussed in this publication. Concluding are a description of 13 new products in the field of technical and vocational education, and a list of catalogs and pamphlets related to the area of vocational training. A 26-item list of references is included. (A. B. G.)

299 Carpenter, C. R., and others
A FACULTY OFFICE STUDY: DESIGN AND EVALUATION
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York. December 1961, 15 pp.

As a possible solution to the problem of a faculty office that was neither the private office nor the multiple-person office, a two-person office unit was designed by W. H. Wiegand, director of the department of physical plant planning and construction at the Pennsylvania State University. Where low initial and maintenance costs and a reasonably high factor of space utilization are requirements, it is believed that the proposed two-person unit offers a solution to many faculty office problems. The results of the two-person unit are discussed in detail. (H. E. J.)

300 Chaffee, Leonard
THE INFLUENCE OF THE LOCATION OF THE SUPERINTENDENT'S OFFICE ON THE EDUCATIONAL ADMINISTRATION COMPLEX
Ohio State University
Columbus, Ohio. April 1962, 191 pp. University Microfilms 62-752

In this study a weighted index was used in ascertaining the relationships that existed among teachers, principals, superintendents and the "ideal" as posed by members of a jury composed of professors of educational administration. Analysis of the data showed the responses of personnel in school districts in which superintendent's offices are located in administration buildings to be consistently more closely allied to the "ideal" as determined by the jury of experts. In those school districts in which superintendents' offices are located in instructional school buildings, it was evident that principals are not fulfilling all facets of their leadership roles to the degree attained by principals in school districts which house the offices of chief administrators in administration buildings. In the sample employed for this study, the location of the superintendent's office in a school building used for instructional purposes negatively influenced the relationships that exist within the educational administration complex of the school district. The recommendation was made that offices of chief school administrators not be provided for in school buildings utilized for instructional purposes. Further recommendations were made related to an evaluation of the various administrative offices in the light of the type of services desired; a clarification of the role of principals as administrative leaders; and a study of superintendent's operations. (T. E. J.)

301 Clinchy, Evans and John Beynon
PROFILES OF SIGNIFICANT SCHOOLS: PUBLIC SCHOOL NO. 9,
BOROUGH OF QUEENS, NEW YORK CITY
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York. September 1960, 20 pp.

This is one of several Profiles of Significant Schools completed by the Educational Facilities Laboratories. Public School No. 9 is one of nine units of the New York school system which rents its space from apartment owners and the New York City Housing Authority. It is the only one that is a separate school; the others are annexed to existing schools. Its significance rests on its being part of a public housing project--not a building on a separate site as a unit. Its advantages are: (1) Being a part of a housing project results in a greater sense of community spirit. All but six of its 364 pupils come from the project itself. (2) There is plenty of play space just outside its doors which serves for both school and neighborhood. (3) The school occupies the ground floor only and can be used for other community purposes. Can be converted to school use or to apartments as population changes. Disadvantages are: (1) Most rooms are not ideal for school use because they were built for other purposes. Some are small and window space is bad. Too many concrete columns in rooms. (2) Separation of units makes administration, communication, and distribution of school supplies difficult. No intercom system. Would work better if the school had been planned at first as vital part of the housing development. Public School No. 9 is not costly. School-community relationship is good, safety problems are at a minimum, teacher-parent conferences are easily arranged, there are no transportation problems, and school facilities can be used day-and year-round. (A. B. G.)

302 Clinchy, Evans
PROFILES OF SIGNIFICANT SCHOOLS: RICH TOWNSHIP HIGH SCHOOL,
OLYMPIA FIELDS CAMPUS, RICH TOWNSHIP, ILLINOIS
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York. May 1960, 24 pp.

Report on a school constructed in two sections--the first in 1961 and the second in 1964--to house an enrollment of 1,500 in grades 9-12. The goal of the planner was to build a school that would provide an efficient and productive education in an adaptable and economical building. The basic philosophy was centered around the team approach to teaching with the staff and program split into four divisions--(1) humanities, (2) science and mathematics, (3) vocational and fine arts, and (4) health and physical education. The teams are organized under the leadership of the appropriate division-head. Each division is housed in its own separate area and each team shares an interior court and team preparation room. The site contours provide practical arts and activities on the lower level with academic areas on second level. The orginal unit provides for expansion to accommodate the second section and the total structure consists of a skeleton steel frame with nonload-bearing walls. Mechanical and ventilating systems are either in the ceiling or floors and the modular bays permit enlarging or reducing spaces by moving walls. The commons area envisions multiple use. The building is heated and cooled by means of a water-to-water heat pump and a significant portion of the report discusses relative costs and operation of several heating and cooling systems. (J. H. H.)

303 Clinchy, Evans and others
PROFILES OF SIGNIFICANT SCHOOLS, Belaire Elementary School,
San Angelo, Texas
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York 10022. September 1960, 19 pp.

The Belaire Elementary School is a circular or decagonal building containing eight classrooms, a kitchen, an office and a multipurpose room in the center. The multipurpose room is raised so that it can become a stage when two sliding walls are opened and three classrooms become an assembly. The building is air conditioned with a mechanical room beneath the multipurpose room which reduces the duct work to the classroom. Wide overhangs protect the building from direct sunlight and planters provide an esthetically pleasing appearance both from within and without. Each classroom has an exterior door and also a hallway around the multipurpose room. The hallway is separated from classrooms by 4' x 8' plywood panels and movable storage cabinets. The central multipurpose room can be used for eating, and audio-visual, or theatrical rehearsals by pulling a curtain surrounding the area. The building is constructed of reinforced concrete slabs covered with asphalt tile. Exterior walls are brick piers or window walls of glass and asbestos cement board. The roof is formed with long span steel bar joists, steel beams, and steel roof deck. The entire structure is supported by steel pipe columns. Belaire contains 13,650 square feet plus 800 square feet of mechanical basement. In addition there are 11,144 square feet of covered, paved and unenclosed play area beneath the overhangs, making a total of 20,022 square feet, computing the latter area at one half. The construction cost, in 1960, was $179,418 excluding architect's fee, for a square-foot cost $8.96. The building does not contain a library or a gymnasium and cannot be expanded. (J. H. H.)

304 Clinchy, Evans and others
PROFILES OF SIGNIFICANT SCHOOLS, Schools for Team Teaching
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. February 1961, 64 pp.

Nine elementary and junior high schools designed to house team teaching programs are described. The buildings are representative of pioneer efforts to design facilities for team teaching which is defined as the cooperative planning for and teaching of various sized groups of students in flexible teaching spaces allowing for rapid shifting of large and small classes. Teams are made up of 2-8 members assigned subject matter and teaching responsibilities compatible to their interests, ability, training, and experience. Two pioneer elementary schools at Englewood, Florida, and Carson City, Michigan, are described, costing $12.08 and $13.85 per square foot respectively. Two elementary schools in Madison Heights, Michigan, have teams housed in four classroom spaces clustered around a central workroom and teaching area. Flexibility is gained by the use of lightweight wood panels held in place by air compression-air walls. A Jefferson County, Colorado, junior high school arranges three classrooms as a trapezoid to form a team "triad." A little theatre seating 100 students can be expanded to a 400-seat auditorium by using an adjacent cafeteria. A Lexington, Massachusetts, elementary school features more permanent kinds of space to accommodate the typical needs of team teaching. Other schools feature team duplexes set in large, circular, compass style buildings; complete communications and electronic systems; the use of domes and hyperbolic paraboloids to enclose large uninterrupted areas; and the classroom clusters arranged in a semicircle around an outdoor amphitheater designed to provide flexibility of pupil movement through a nongraded curriculum. (R. J. S.)

305 Clinchy, Evans and Beynon, John
PROFILES OF SIGNIFICANT SCHOOLS Two Middle Schools,
Saginaw Township, Michigan
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. September 1960, 26 pp.

Two middle schools, accommodating 650 students in grades 5-8, are designed to improve the transition of elementary pupils to a modern high school program featuring individualized, self-directed study and research. Located on 18-and 24-acre plots, the schools are accordingly planned with a compact design and a cluster design, the former costing $13.37 per square foot, the latter $14.07. Classrooms are open at ends facing each other. Open areas can be visually blocked with chalkboards, tackboards, or storage cabinets and an esthetic feeling of spaciousness still maintained. Common space between rooms is raised to be used for a stage, small group study, or storage area. Acoustics are controlled by the concept of partial coverage of ceiling areas with sound-absorbent tile. The non-academic areas are separately housed but appear to belong to the total complex. Conceptually, the fifth grade is still a self-contained "home" but more open and less restrictive than traditionally. The sixth grade is exposed to informal teacher teams in an inter-room "neighborhood" complex. The seventh and eighth grades are considered a single unit and spend half the day in block time study in their homerooms and half the day with subject specialists in a departmental "society." Independent research work and individual and committee projects are emphasized. The schools are flexibly designed in case the middle school educational concept goes away. (R. J. S.)

306 Committee on Art Room Planning
PLANNING FACILITIES FOR ART INSTRUCTION
National Art Education Association
Washington, D. C. 60 pp.

A pamphlet describing approaches to and facilites for the art program. The first part discusses art in the elementary school including approaches to teaching art activities in elementary school art, art in the self-contained classroom, and specifications for facilities and finally the multipurpose art room for the elementary school. Art in the junior high school includes both the activities of art and specifications for an art workshop. Art in the senior high school discusses both the art activities and specifications for art facilities. In the discussion of facilities, both photographs and specifications are given for various pieces of equipment. A final section of the booklet is devoted to a series of fifteen plans that are in use in various elementary, junior high, and senior high schools throughout the United States giving size, layout, and equipment that should prove helpful to those engaged in solving the problem of planning effective facilities for art instruction. A 27-item bibliography is included. (M. N. B.)

307 Coody, Ben E. and W. S. Sandefur
DESIGNING SCHOOLS FOR VARIABILITY
Educational Leadership, Vol. 24, No. 6
Journal of the Association for Supervision and
Curriculum Development
Washington, D. C. March 1967, 3 pp.

Proposals for designing school buildings so that they will enhance the individuality and variability of students and teachers, in line with modern teaching methods. Suggestions for a team teaching center include a large-group lecture room which can be subdivided, glass-paneled seminar rooms, a soundproof listening and recording area, semiprivate carrels, a small reading room to house library resource materials and audio-visual equipment, a team workroom for teachers' preparation, the heart of an instructional program which emphasizes individuality. Besides books and periodicals a library may contain films, filmstrips, tapes, records, disc recordings, slides, microfilm, video-tapes, maps, and other materials. Other library suggestions: open stacks with the bookshelves used to subdivide the large reading room, several "satellite" reading rooms strategically located throughout the school, individual study carrels, and soundproof rooms for listening, viewing, recording, and typing reports and other materials. The architect must design a building that will facilitate current educational plans and that can be adapted to future educationl programs, It is imperative that school buildings include at least the rudiments necessary for future installation of electronic computer facilities. (S. A. M.)

308 Committee of Music Educators National Conference
MUSIC BUILDINGS, ROOMS, AND EQUIPMENT
Committee of Music Educators
Washington, D. C. 1966, 119 pp.

The booklet provides guidelines of music facilities for the music educator, the administrator, the board of education,and the architect in designing and constructing new school building or remodeling existing ones. Its broad scope, from elementary school through university level, outlines the music facilities needed by each, the location, design, and size of the facilities; the storage and auxiliary space; and the equipment. Also included are sample floor plans and photographs of recently completed music facilities as well as information on auditoriums and music shells and bibliography for additional references. (M. W. B.)

309 Cornacchia, Harold J., and Nixon, John E.
PLAYGROUND FACILITIES FOR RURAL AND SMALL ELEMENTARY
SCHOOLS, Monograph No. 4
School of Education, Stanford University
Stanford, California. 1955, 41 pp.

Discusses playground facilities within the following areas: (1) the importance of adequate playgrounds in small elementary schools, (2) characteristics of an adequate school playground, (3) a desirable physical education program for elementary schools, (4) playground requirements for one- and two-teacher elementary schools, (5) playground requirements for three- and four-teacher elementary schools, (6) playground requirements for five- to eight-teacher elementary schools, and (7) other general considerations including summaries of playground requirements for small elementary schools. (H. H. C.)

310 Darling, Richard L.
CHANGING CONCEPTS IN LIBRARY DESIGN
American School and University
737 3rd Ave.
New York, New York. May 1965, 3 pp.

School library programs are changing rapidly to support the new methods in teaching such as team teaching, flexible scheduling, individual study, and new audiovisual aids and programmed instruction. More libraries are becoming instructional materials centers of a comprehensive nature and include a wide range of materials and new services for these materials to aid students, teachers, and administrators. In planning and design of school libraries the concept has changed in order to facilitate the use of new materials and to enable teachers and students to use library materials in new ways. Small reading rooms, individual study carrels, areas for listening and viewing, and space for production of audiovisual materials are being made part of the new libraries. New to the library is the typing room. The most radical change is the workroom for the production of transparencies, overlays, slides, and other materials. Storage area for the different equipment and nonprinted materials has become important. (M. W. B.)

311 Educational Facilities laboratories
A COLLEGE HEALTH CENTER, Case Studies of Educational Facilities No. 6
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. 32 pp.

Data are offered showing that health facilities are usually inadequate and in some cases non-existent at small independent liberal arts colleges and teachers' colleges. Three colleges decided to pioneer a study to develop a model student health center for small liberal arts colleges---Colorado College, Colorado Springs; Knox College, Galesburg, Illinois; Wittenberg University, Springfield, Ohio. The Educational Facilities Laboratories gave $10,000 for the project after making a random check, and a reviewing studies by the American Health Association, 1953 and the American Medical Association Council of Medical Services, 1961. At a series of conferences in 1961 and 1962, college representatives and the architectural firm, Caudill, Rowlett and Scott, Houston, Texas, agreed upon (a) a keep-the-student-in-school kind of medical set-up (b) central control by one duty nurse, and (c) possible internal expansion in case of upswing in patient load. The architectural solution was a round building with three concentric rings; the outer ring contains patients' rooms, entrance lobby, and examination and consultation rooms, and a room for x-ray facilities. The inner ring is a study area for ambulatory patients and for expanding bed area, if necessary. The center ring, the nurses area, is raised so as to prevent a view across the study area making possible control of men's and women's at the same time. Roof design and movable, folding partitions provide maximum flexibility. Seventeen schematics and three pages of perspectives clearly explain the plan. A rectilineal schematic is also presented. (W. S. B.)

312 Educational Facilities Laboratories
EFL COLLEGE NEWSLETTER, No. 2
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. 4 pp.

A brief summation of current research on language laboratories. Sections include descriptions of critical factors in selection of equipment. Audio quality has been the subject of two years of intensive investigation at MIT's Department of Modern Languages. The authors' conclusions on the necessary frequency range and the cost involved in purchasing a language laboratory are offered. Another research project under way at Purdue University's Department of Modern Language is reviewed. Teacher-student ratio, remote controlled tape recorders, and simultaneous feedback are the subjects of investigation. (R. L. F.)

313 Educational Facilities Laboratories
EFL COLLEGE NEWSLETTER NO.6, FINE ARTS FACILITIES:
PAST, PRESENT, FUTURE
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York, New York 10022. October 1965, 36 pp.

Present planning questions to be faced by institutions undertaking new construction for the arts; then, by implication gives answers by referring to the new arts facilities at two colleges, Macalester College, St. Paul, Minnesota and Webster College, Webster Groves, Missouri. These facilities sum up a broad range of planning considerations and represent widely divergent architectural solutions. Included are architectural drawings and photographs. A descriptive listing of fine arts centers, by size and institution. (R. F. T.)

314 Educational Facilities Laboratories
PROFILES OF SIGNIFICANT SCHOOLS, Montrose Elementary School,
Laredo, Texas
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. 1960, 16 pp.

The population of the Montrose Elementary School at Laredo, Texas, mainly Spanish speaking, is from an economically depressed section of a hot, dusty city. School attendance fluctuates greatly as many older children drop out in the spring and fall, to work on farms. Because of language problems and poor educational background, they also drop out when school work seems too difficult. The educational and architectural problems were (1) to provide a curriculum and teaching procedures tailored to the specific needs of the students and (2) to design a building which would effectively support the educational program and provide an environment which, itself, would draw students to the school. Architecturally, the school is divided into four separate one-story buildings called quadruplexes. Each quadruplex is a closed unit, each with a cooling system providing a cool, dust-free atmosphere. Quadruplexes are arranged so as to have direct access to a shaded play or teaching space. To shade the outdoor area, the architects used plastic umbrella-like canopies. Testing of the plastic material was accomplished in conjunction with Texas Engineering Station at College Station, Texas. The material admits 20 percent of sunlight. Caudill, Rowlett and Scott, architects, present five schematics, eight photographs, and an elevation of the Montrose Elementary School. (W. S. B.)

315 Ellsworth, Ralph E. and Wagener, Hobart D.
THE SCHOOL LIBRARY
Facilities for Independent Study in the Secondary School
Educational Facilities Laboratories, Inc.
477 Madison Avenue
New York 22, New York. September 1963, 142 pp.

Emphasizes the changing role of libraries in view of the changing goals, methods,and schoolhouses in a changing educational program. The shifting emphasis is on self-instruction and independent study. In order to achieve this emphasis the school library becomes the focal point and this report concerns itself with the creation of good working libraries. The library usually involves three elements: the materials, the staff, and the physical setting. It should be thought of as a system rather than a single enclosed room. Among the various kinds of school library systems are: (1) a single, inclusive, central library, (2) a dual system, one for elementary and one for secondary, (3) a central library with truck service, and 4) a decentralized system. The report attempts to break down the "cells and bells" organization to allow more opportunity for independent study. The implications of team teaching, and automated and self-teaching devices are explored as well as the new advances in subject matter: science, mathematics, and languages. The importance of carrels is explored in light of the need for facilities for independent study. A most important part of the study involves the physical contents and layouts, both for the teaching staff and the readers. Suggestions are made as to size, circulation, layout, and environmental elements. A large portion shows schematic plans and arrangements for carrels and arrangements for central libraries. (J. H. H.)

316 ESTANCIA HIGH SCHOOL - A SCHOOL FOR ALL SEASONS
School Planning Laboratory
Stanford University
Stanford, California. June 1966, 6 pp.

Contains photographs of various sections of this school and a floor plan of the building complex. All the interior walls are non-load-bearing and made up of demountable double steel panels. It has the outdoors built-in with a single roof that covers 204,662 square feet of floorspace or 102.3 square feet per pupil with a total pupil capacity of 2,000. The total cost for Estancia High School was $3,747,000 including $250,000 for the 20 acres of site development, $227,000 for furniture and equipment, $90,000 for a swimming pool and $7,000 for the audiovisual system. Cost of carpeting, an essential feature of the open plan concept which governs the design of this school, will be defrayed over a lease. More than 2.5 acres of carpeted area are in the building. An analysis of the net cost of carpeting over costs incurred without carpeting showed that the carpeting only cost the district an additional $2,850 and this amount would be saved in maintenance costs. (M. W. B.)

317 FACILITIES FOR DEVELOPMENTAL, APPLIED, AND SPECIALIZED
COURSES IN HIGH SCHOOL
School Facilities for Science Instruction (2nd. edition)
National Science Teachers Association
Washington, D. C. 1961, 14 pp.

Content is divided into three parts: (1) rooms for developmental science courses; (2) rooms for applied science courses; and (3) rooms for specialized science courses. Photographs of these various facilities are used in this article as well as schematic diagrams with explanations of the various facilities. An appendix contains such information as: (1) lists of equipment and supplies; (2) sources of furniture, equipment, and supplies; and (3) a bibliography. (M. W. B.)

318 FACILITIES FOR ELEMENTARY SCHOOL SCIENCE
School Facilities for Science Instruction (2nd edition)
National Science Teachers Association
Washington, D. C. 1961, 14 pp.

The elementary science program is carried on in the self-contained classroom, which contains facilities for fine arts, language arts, music, science, social studies, and the various other areas of work in the elementary school, and therefore must have a high degree of flexibility. An array of photographs, two floor plans for the elementary school are included and several pieces of equipment used for storage are suggested. In planning facilities for elementary school science the following must be considered: work areas for the development of skills, conference area, reading areas, dramatization area, audiovisual aids to science learning, the out-of-door classroom, and the use of community resources. A 14-item checklist of elementary school science facilities is included. (M. W. B.)

319 FACILITIES FOR HIGH SCHOOL BIOLOGICAL SCIENCE
School Facilities for Science Instruction (2nd edition)
National Science Teachers Association
Washington, D. C. 1961, 21 pp.

Contains a statement of activities of the biological program and breaks down the facilities into eight sections which have subsections and are as follows: (1) planning facilities for biology; (2) classroom and laboratory facilities for biology; (3) utilities and services; (4) equipment and supplies; (5) facilities for storage and preparation; (6) plans for biology rooms; (7) other school and community resources; (8) checklist of biological science facilities. There are five schematic layouts of classroom-laboratory for biology included. These are described in the article. Other school and community resources include such items as greenhouses, aquaria and terraria, fish ponds, growing room for plants and animals; it also has photographs and diagrams of greenhouses. A 21-item checklist of the biological science facilities is also included. (M. W. B.)

320 FACILITIES FOR HIGH SCHOOL CHEMISTRY
School Facilities for Science Instruction (2nd edition)
National Science Teachers Association
Washington, D. C. 1961, 20 pp.

Discusses areas which have subsections and are as follows: (1) planning facilities for high school chemistry; (2) classroom and laboratory facilities for high school chemistry; (3) utilities and services; (4) equipment and supplies; (5) facilities for storage and preparation; (6) plans for chemistry rooms; (7) other school and community resources; and (8) checklist of chemistry facilities. The fume hood and special ventilation of the room are both safety features of a chemistry room that cannot be ignored by the planner. Also additional display and storage space is needed. As part of the safety provisions for fire control, sand and carbon dioxide fire extinguishers are recommended as well as an asbestos or wool blanket to smother burning clothes and a shower head for immediate wetting. There is a 23-item checklist of the chemistry facilities included in this article. (M. W. B.)

321 FACILITIES FOR HIGH SCHOOL GENERAL SCIENCE
School Facilities for Science Instruction (2nd edition)
National Science Teachers Association
Washington, D. C. 1961, 21 pp.

In planning facilities for general science one must consider the activities, flexibility, use of new facilities or renovation. Some classroom and laboratory facilities for general science are: demonstration desk, student chairs and tables; provision for special areas of the program, chalkboards, facilities for projects and development activities, bookshelves and chart racks, club activities facilities. The utilities and services must also be included and the equipment and supplies are of paramount nature for a successful program. Included in the article are eight floor plans for the general science program which give the basic considerations necessary, the storage room area, and the preparation area. Each of the eight room plans are discussed. Other school and community resources are given treatment such as the development of an outdoor science park. A 17-item checklist of the general science facilities is also included. (M. W. B.)

322 FACILITIES FOR THE HIGH SCHOOL MULTIPURPOSE SCIENCE ROOM
School Facilities for Science Instruction (2nd Edition)
National Science Teachers Association
Washington D. C. 1961, 23 pp.

This section is broken down into several subsections that include: (1) a look at science teaching in the small school (2) planning facilities for all high school sciences; (3) classroom and laboratory facilities for all sciences; (4) utilities and services; (5) equipment and supplies; (6) facilities for storage and preparation; (7) eight schematic plans for multipurpose science rooms; (8) other school and community resources; and (9) a 22-item checklist of facilities for the multipurpose science room. A major problem in using the space in a multipurpose science room is that of providing for the basic activities of two major fields of science--biological and physical--within one room. (M. W. B.)

323 FACILITIES FOR HIGH SCHOOL PHYSICS
School Facilities for Science Instruction (2nd edition)
National Science Teachers Association
Washington, D. C. 1961, 21 pp.

Section is broken down into eight major areas with each having subsections that include: (1) planning facilities for high school physics; (2) classroom and laboratory facilities for high school physics; (3) utilities and services; (4) equipment and supplies; (5) facilities for storage and preparation; (6) plans for physics room; (7) other school and community resources; (8) a checklist of physics facilities. A variety of 11 schematic diagrams of layouts for rooms for the high school physics program are shown. Most of these facilities combine the room for use with one other science such as chemistry or general science. Each of these layouts is described in further detail in the article. A 13-item checklist of the high school physics facilities is included. (M. W. B.)

324 Frame, Sutherland J. and John W. McLeod
BUILDING AND FACILITIES FOR THE MATHEMATICAL SCIENCES
Conference Board of the Mathematical Sciences
Washington, D. C. 1963, 170 pp.

Presents general information helpful to anyone who must work with an architect in planning an educational building. However, the book is intended primarily to serve three groups of people who may become involved in the design of mathematical facilities: mathematicians, architects, and administrators. Information includes: (1) the changing scene for the mathematical sciences, (2) instruction in mathematical sciences, (3) basic considerations in planning mathematics facilities, (4) instructional areas, (5) study and research areas, (6) departmental libraries, (7) administrative areas, (8) public areas, (9) computation centers, (10) mathematical facilities for secondary school education, and (11) instructional materials for colleges and secondary schools. (H. E. J.)

325 Frisina, D. Robert
GALLAUDET'S NEW HEARING AND SPEECH CENTER
Journal of American Speech and Hearing Association
Danville, Illinois. March 1960, 3 pp.

Reviews the design of the Hearing and Speech Center, Gallaudet College, Washington, D. C. The circular structure eliminates parallel walls in all the classrooms used for hearing and speech therapy. Therapy rooms are equipped for a maximum of six students and include group auditory training units, tape recorders, and other visual aid equipment and materials. Other rooms include: (1) graduate lecture room, (2) a filming and editing room, (3) phonograph record library and workshop for disc cutting and preparation of auditory training materials, (4) a waiting room, (5) two rooms for observation and testing, (6) restroom facilities, (7) an office supply area, (8) director's office, and (9) receptionist's area. Photographs and floor plan sketches are included. (H. H. C.)

326 Fulk, Harold W.
COMPARING TEACHER BEHAVIOR IN CLASSROOMS WITH OPERABLE WALLS AND CLASSROOMS WITH PERMANENT WALLS
Stanford University
Stanford, California. 1963.

The study indicated that a large number of teaching activities, considered as functions of teaching, may occur with similar frequency regardless of type of wall. A further conclusion is that certain teaching functions may occur, or be inhibited, because of the nature of the physical environment. This means that teacher activity may, in part, be influenced by the shape and kind of room in which the teacher is placed. (P. J. O.)

327 Gilliland, John W.
PROFILE OF A SIGNIFICANT SCHOOL, Alcoa High School, Alcoa, Tennessee
School Planning Laboratory
University of Tennessee
Knoxville, Tennessee. March 1964, 16 pp.

A description with the aid of floor plans and diagrams of the design of a compact, two-story, hexagonal-shaped high school building erected at Alcoa, Tennessee. The scale on which the drawings of the floor plans are reproduced is small and consequently a little difficult to interpret without magnification, but, once the plan has been interpreted, it becomes evident that the design has the qualities described in the text: compactness, economy of construction, flexibility, expansibility (within limits) and adequacy to meet specific program requirements. Descriptive details are provided of classroom arrangements, the instructional materials center, rooms for special subjects, food handling facilities, visual, acoustical, and thermal treatment, and construction features. (C. A.)

328 Gilliland, John W. (Director)
PROFILE OF A SIGNIFICANT SCHOOL, Athens Junior High School,
Athens, Tennessee
School Planning Laboratory
University of Tennessee
Knoxville, Tennessee. 1965, 20 pp.

This is one of a series of publications concerning new schools in Tennessee that seemingly have certain features that make them different from the traditional type. New concepts of design and construction contribute to the significance of the new junior high school at Athens, Tennessee. This Profile does not attempt to go into detail on all the features of the school plant. Rather, it presents a well-illustrated description of certain features which do have major significance. According to the AASA 1965 Architectural Exhibit Jury these features are: Instructional materials center, teachers' work center, flexible teaching space, and auditorium specially designed for use of projection equipment. Window space is sparingly used and many floor areas are carpeted. The building was designed around nine circular focal points, an area of 107,000 square feet, capacity of 1000, at a cost of $14.36 per square foot. The school plant houses grades seven, eight, and nine. (A. B. G.)

329 Gilliland, John W. and others.
PROFILE OF A SIGNIFICANT SCHOOL, Riverview Gardens Elementary School,
St. Louis, Missouri
School Planning Laboratory
University of Tennessee
Knoxville, Tennessee. April 1964, 16 pp.

Description and schematic picturization of the new Lewis and Clark Elementary School. Emphasis is on educational needs and building function. Graphic presentation of model of building is included. (R. L. F.)

330 Gilliland, John W. (Director)
PROFILE OF A SIGNIFICANT SCHOOL, Rockwood Elementary School,
Rockwood, Tennessee
School Planning Laboratory
University of Tennessee
Knoxville, Tennessee. April 1964, 16 pp.

A graphic, descriptive booklet on the planning, construction and functioning of a school for grades kindergarten through the sixth grade. The building of 41,756 square feet is located on a site of approximately eight acres, on a ridge overlooking the town---designed to fit into the beauty of the landscape, but also, to contribute to the needs and comfort of the children. Informality and flexibility were the keynotes of planning plus utilization of natural beauty. The building includes rooms for the administration, music, library, and auditorium activities as a core surrounded by 16 classrooms, all similar. Significant features are an adjoining open play shelter, air conditioning, carpeting, "satellite" feeding, and the control of light, heat, and sound...all at a cost of $10.17 per square foot. (A. B. G.)

331 Hase, Gerald J. and Hick, Basil L.
PLANNING THE INDOOR PHYSICAL EDUCATION FACILITIES
New York State Education Department
Division of School Buildings and Grounds
Albany, New York. 1962, 20 pp.

This is one of a series of pamphlets designed and published by the State Education Department and the University of the State of New York. Each pamphlet relates to some specific area of a school plant and its purpose is to aid school officials and architects in their planning of these areas. The mission of Planning the Indoor Physical Education Facilities is to be helpful to those who are preparing plans for new buildings and those who contemplate the improving of physical education facilities in old buildings. Basic consideration is given to the gymnasium and its auxiliary facilities. Location, dimension, constructive materials, equipment, care, and maintenance are discussed in the areas of gymnasium, teaching stations, small activity rooms, swimming pools, dressing and showering rooms, toilets, team rooms, laundry rooms, equipment drying rooms, apparatus rooms, bulletin boards, electrical installations, classrooms, and physical education offices. Dimensional layouts are presented for badminton, shuffleboard, basketball, paddle tennis, volley ball, and deck tennis. (A. B. G.)

332 HOW AWARD WINNING SCHOOLS COMPARE
The Nation's Schools
1050 Merchandise Mart
Chicago, Illinois. January 1965.

All of the schools reported are distinguished by one common characteristic: each has won a 1964 citation for excellence of design from either the AASA or a chapter of AIA. Descriptions and floor plans are reported for 12 high schools, 7 junior high schools, and 12 elementary schools and the data will enable schoolmen to see how schools acknowledged to be outstanding have solved problems they may be facing. General impressions of these 31 schools reflect a tendency to compact the buildings, provide for large and small groups, individual study carrels, teacher preparation space, an increasing use of air conditioning and carpeting. Square foot cost ranges from a low of $7.79 to a high of $18.91. (J. H. H.)

333 Hurd, Paul
SCIENCE FACILITIES FOR THE MODERN HIGH SCHOOL, Monograph No. 2
School of Education, Stanford University
Stanford, California. 1954, 52 pp.

School science facilities are discussed with reference to the (1) planning science rooms, (2) educational specifications for modern science teaching, (3) trends and developments in secondary school science teaching, (4) factors basic to the development of adequate science facilities, (5) the modern science room,

(6) auxiliary science rooms, (7) science teaching facilities outside of the classroom, (8) planning for equipment and furnishings, (9) revision of existing science equipment and facilities, and (10) master checklist of science facilities. Illustrations, floor plans, and facility diagrams are presented. (H. H. C.)

334 IDEAS FOR PLANNING YOUR INSTRUCTIONAL MATERIALS CENTER
School Building Assistance Commission
Boston, Massachusetts. June 1964, 18 pp.

The instructional materials center is discussed with reference to (1) functions of the center, (2) considerations, (3) principal areas, (4) small group areas, (5) office space, (6) work areas, (7) storage maintenance area, (8) faculty resource area, (9) listening and speaking laboratory, (10) darkroom, (11) television studio, and (12) developmental reading room. (H. H. C.)

335 Johnson, Warren E.
PORTLAND CENTER FOR HEARING AND SPEECH BUILDING PROGRAM
Journal of the American Speech and Hearing Association
Danville, Illinois. March 1962, 2 pp.

Reviews the characteristics and design of the Portland Center for Hearing and Speech, Portland, Oregon. In summary, the exterior is smooth stucco over concrete block. The structure is of precast, prestressed concrete, T-beam construction utilizing precast concrete columns with cement block masonry partitions. The midsection of the building contains a lobby and nursery playroom for preschool deaf children. The north wing will house the speech correction services and psychological, casework, and vocational counseling services. It also contains general business and secretarial offices. The south wing contains all audiology services, space for auditory training and speechreading classes, a library, offices for the teacher of the deaf, audiologists, medical director, and agency director. Photographs and floor plan sketches are included. (H. H. C.)

336 Justin, J. Karl
LECTURE HALL AND LEARNING DESIGN: A SURVEY OF VARIABLES, PARAMETERS, CRITERIA, AND INTERRELATIONSHIP FOR AUDIO-VISUAL PRESENTATION SYSTEMS AND AUDIENCE RECEPTION
Society of Motion Picture and Television Engineers, Inc.
New York, New York. November 1965, 46 pp.

A technical discussion of the problems and solutions in planning for audio-visual technology. The areas covered are (1) basic interrelationship factors, including seating area, optimum viewing angles for rear screen and front screen projection, maximum and minimum desirable viewing distance, and image height and width; (2) limitations, involving screen height and width, seating rise, and screen illumination; (3) acoustical considerations; (4) economic analysis and (5) creative solutions. Algebraic formulas are developed for a mathematical solution to each consideration. The author suggests a team effort in identification and pursuit of educational goals, the team to be composed of an educator, an architect and an objective audio-visual consultant. Overlapping training so that each would understand and appreciate the concepts and limitations of the other disciplines. (J. H. H.)

337 Kunsela, William
PLANNING BUILDING FACILITIES FOR VOCATIONAL AGRICULTURE NO. 5
New York State Education Department
University of the State of New York
Albany, New York. March 1957, 22 pp.

Provides standards and recommendations for facilities to be used for high school agricultural departments. A description of the classroom space, shop space, and storage area is given. In the appendix is a list of tools and equipment necessary for the vocational agriculture program and schematic drawings of an agricultural classroom and shop combination. (M. W. B.)

338 MacConnell, James D.
A WINDOW TO THE FUTURE
School Planning Laboratory
School of Education, Stanford University
Stanford, California. 1964, 15 pp.

A graphic presentation of 12 junior and four-year colleges. Schematic diagrams of large spaces and architectural oriented pictures are included. There is a brief commentary on each college or building within the college complex. (R. L. F.)

339 McConnell, Freeman E.
PLANNING OF A MULTI-PURPOSE SPEECH AND HEARING FACILITY
A Journal of the American Speech and Hearing Association, Vol. 2, No. 6
Interstate Printers and Publishers, Inc.
Danville, Illinois. June 1960, 3 pp.

Review of the construction of the new Bill Wilkerson Hearing and Speech Center, Nashville, Tennessee. Planning involved incorporating six basic areas into the floor plan design. Four of these areas are those used specifically for: (1) clinical services, (2) teaching of students, (3) research; and (4) preschool education which represents a special area, though as a function it may be thought of as a part of clinical service. Added to the four previously mentioned are: (5) public and administrative areas, and (6) general service areas, the latter for utility and maintenance. A mechanical shop, printing and duplicating room, and TV monitoring room are also included in general service. Floor plans and photographs are provided. (H. H. C.)

340 Mississippi State Department of Education
SCHOOL SHOPS, LAYOUTS, JUSTIFICATIONS, EQUIPMENT FOR
TRADE AND INDUSTRIAL EDUCATION PROGRAMS
State Department of Education
Jackson, Mississippi. 55 pp.

Suggestions for school shops are presented in three general areas: (1) planning, (2) layouts, and (3) tools and equipment. Within the planning area, two types of shop programs are discussed: (1) industrial arts education and (2) trade and industrial education. Location of shop buildings, the shop area, auxiliary facilities, etc., are topics discussed within the planning stage. Layouts and floor plans are provided for auto mechanics shop, building trades shop, commercial art shop, cosmetology shop, drafting shop, general electrical shop, general machine shop, metal trades, mill cabinet shop, print shop, etc. Suggested shop equipment and tools are discussed under the following headings: (1) automotive, (2) building trades, (3) drafting, etc. (H. H. C.)

341 Martin, Francis B.
MULTIPURPOSE UNITS IN ELEMENTARY SCHOOLS, APPROPRIATE ACTIVITIES AND REQUIRED FACILITIES
University of Southern California
Los Angeles, California, December 1960, 271 pp.

Important conclusions and findings of this study included: (1) Activities which are an important part of the educational program, which are inappropriate to the classroom, whose facilities can be efficiently shared, which are common to school and community, and for which separate facilities cannot be financed, may be housed in a multipurpose unit. (2) General agreement existed between groups regarding desirability--undesirability of housing listed activities, and of providing listed facilities. Exception: central kitchen cooking, opposed by users, favored by the jury; difference significant at the 1 percent level of confidence. Responses indicated that facilities were considered adequate as provided. (3) A multipurpose unit is a desirable and integral part of most schools. Its adequacy depends upon the development locally of criteria for the selecting of activities to be housed, upon selection of these activities, and upon the cooperative development of the educational specifications and performance standards as a basis for architectural specifications. (4) Assembly, food service, display, special instructional activities, social-recreation activities, and community activities were approved for the multipurpose unit. (5) An auditorium-cafeteria capable of serving one-half the maximum enrollment, audio-visual facilities, permanent stage, activity room, kitchenette, teacher dining room with kitchenette, and adequate game space (basketball only under special conditions) were approved as a part of the multipurpose unit. (T. E. J.)

342 Marmon, Harvey V., Jr.
AN UNUSUAL FORM FOR A HIGH SCHOOL
Marmon and Mak Associates
San Antonio, Texas. June 1965.

This is a high school for the Northside Independent School District, San Antonio, Texas, for an ultimate capacity of 1800 students and an immediate capacity of 1200. The primary objectives of the architects were (1) to achieve maximum flexibility and (2) provide proper facilities for departmentalized teaching. The design criteria included: (1) zoning of noise, (2) grouping of related areas, (3) increase avenues of circulation, (4) compactness, (5) creation of student incentive. The result was a complex of three circular cells: one two-story academic, one gymnasium, shops, etc., and an auditorium, administration, music and home economics--all cells are connected by covered walkways. The classroom cell has a central library with classrooms surrounding. A central hallway connects all classrooms in addition to an exterior hallway for another avenue of traffic. Core facilities are designed for 1800 students and a future classroom cell will complete the complex. The core of the building is air conditioned, with provision for full air conditioning at a later date. (J. H. H.)

343 Massachusetts School Buildings Assistance Commission and
Physical Education Administrators
PHYSICAL EDUCATION, SECONDARY SCHOOLS, FACILITIES,
AND BASIC EQUIPMENT
School Buildings Assistance Commission
Boston, Massachusetts. 1966, 14 pp.

Provides suggestions for planning the facilities and instructional physical education, after-school activities, and community use. Suggestion topics include the following: (1) computation of teaching stations needed, (2) indoor facilities in the junior and senior high school, including floors, walls, showers etc., and (3) outdoor facilities in the junior and senior high school, including size, location, hard-topping, etc. (H. H. C.)

344 Michigan State Department of Education
THE INSTRUCTIONAL MATERIALS CENTER
State Department of Education
Lansing, Michigan. 1965, 35 pp.

Presents recommendations for the administrative organization of the instructional materials center, utilization of the center, materials used by the center, and the possible organization and layouts for the materials center. Case studies and examples are provided for making the maximum possible usage of the center within both the school and the community. (H. H. C.)

345 NEW BUILDING FOR SCIENCE
American School and University
737 3rd Ave.
New York, New York May 1966, 4 pp.

Reviews the design and construction of Olin Hall of Science at Carleton College, Northfield, Minnesota. Advanced botany and zoology laboratories, an herbarium, and a plant culture room are on the ground floor of the building which is completely air conditioned. On the first floor are laboratories for biology, physiology, biochemistry, two classrooms, and a seminar room. The second floor houses general and advanced physics labs, an anatomy-embryology lab and supply room, a library-seminar area, and a faculty conference room. The top floor has faculty offices and research laboratories. A one-story wing contains two lecture halls and a greenhouse with its own temperature-control system. Photographs and floor plan diagrams are included. (H. H. C.)

346 Nimnicht, Glendon P. and Partridge, Arthur
DESIGNS FOR SMALL HIGH SCHOOLS
Educational Planning Service
Colorado State College
Greeley, Colorado. 1962, 83 pp.

An attempt to answer the question "How can facilities be designed so that small high schools can house efficient and comprehensive educational programs?" Material is the result of a study of small high schools, and significant solutions to problems inherent in the small school. Designs of facilities for multiple class teaching are discussed and illustrated by sketches and actual photographs, as are facilities for team teaching, special subject areas, and general use areas. The report presents illustrations of how some of the nation's outstanding small high schools have used these approaches effectively and analyzes in some detail the implications of each of these approaches for the kind of physical facilities and equipment which are desirable. An appendix explains how the study was conducted. (W. F. C.)

347 North Carolina Department of Public Instruction
Division of School Planning
LEARNING RESOURCES LIBRARY
Department of Public Instruction
Raleigh, North Carolina. April 1965, 16 pp.

Discusses: (1) What services are provided by the Learning Resources Library? (2) Who uses the Learning Resources Library? (3) What personnel are needed? (4) What environmental factors are to be considered? (5) What physical facilities are needed? (6) What are some suggestions regarding sizes and special features? (7) Equipment and furniture, and (8) Relationships and features. Areas are provided with criteria for answering each general topic. Sketches of typical furniture and equipment are included. (H. H. C.)

348 **OFFICE STANDARDS AND PLANNING**
Art Metal, Inc.
Jamestown, New York. 1963, 80 pp.

Outlines basic steps required to analyze office procedures and determine needed office equipment. Requirements of the office layout are discussed with reference to private offices, general office, file departments, vaults, general storage rooms, stationary rooms, coat rooms, interviewing rooms, and conference rooms. (H. H. C.)

349 THE-ONE ROOM SCHOOLHOUSE, MATZE ELEMENTARY SCHOOL
Cypress-Fairbanks Independent School District
Wilson, Morris, Crain and Anderson A.I.A.
3465 West Alabama
Houston, Texas

A booklet containing photographs and layouts explains how Matze school houses an individualized instruction program in a continuous progress organization. Learning rather than teaching is the central focus with team teaching being used in small group instruction. The school is an open plan, fully carpeted. (P. J. O.)

350 Ovard, Glen F.
SOCIAL STUDIES FACILITIES FOR THE MODERN SECONDARY SCHOOL
School Board Journal
233 Central St.
Evanston, Illinois. April 1962, 4 pp.

The author emphasizes the major role that the social studies teacher must assume in the social attitudes of students and the preservation of freedom and democratic values. A careful evaluation of the aims and objectives, curriculum, and teaching-learning activities prior to the planning of social studies classrooms is recommended. Since the effectiveness of the teacher is influenced by the teaching facilities, better planned facilities are needed in most of our social studies departments. The basic areas in a social studies classroom are: (1) student station area; (2) primary teaching area; (3) bulletin board display area; (4) creative project area; (5) open display and exhibit area; (6) a lockable display area; (7) research area; (8) group planning and consultation area; (9) storage area. An example of how these facilities might look in a typical classroom is presented in a diagram. (M. G. C.)

351 Palmer, Ronald R. and William Maxwell Rice
LABORATORIES AND CLASSROOMS FOR HIGH SCHOOL PHYSICS
Educational Facilities Laboratory
477 Madison Avenue
New York, New York. 1961, 32 pp.

Because the nation needs well-informed citizens and well-qualified scientists, provision for higher-quality instruction in physics and for greater numbers of physics students in the future cannot be overlooked in designing new schools. New techniques in teaching will be reflected in building design; viz., team teaching, television, teaching machines as well as a greatly expanded physics curriculum. Gradually but to an increasing extent, the teaching of physics and other high school subjects will take place in a different setting from the familiar "four-square" school building. Significant in the report is the emphasis on and provision for individual student experiments. This requires longer laboratory periods as well as adequate tables, equipment, and services. While the shape of the room is not critical, the size should provide 40 to 50 square feet per pupil plus about 250 square feet for storage and preparation. Ventilation requirements average three to four complete changes of air per hour in laboratories where fumes are not produced and up to nine changes in chemistry laboratories. Illumination should be between 30 and 50 fc with 70 fc at demonstration desks. The study also contains examples of arrangements for a variety of sizes of schools and curriculum needs. (J. H. H.)

352 Pearce, David
FACILITIES FOR TEACHING BLIND CHILDREN
School Board Journal
233 Central St.
Evanston, Illinois August 1961, 4 pp.

Description of a major addition to the Missouri School for the Blind, a residential state institution. A significant portion of the addition was devoted to auxiliary spaces such as dormitories, infirmary, and faculty quarters necessitated by the residential nature of the school. The architectural problem was complicated by the strictures of a limited site area and the nature of the existing building, the initial unit of which was built in 1903. Planning involved the recognition of the limiting factors, consideration of specific problems due to the nature of the student body, specification of design concepts, and development of the architectural solution. The resulting building operates as a "series of smaller schools within an overall framework." (C. S. B.)

353 Peery, Thomas M. and Green, Alan C.
DESIGN FOR MEDICAL EDUCATION
The George Washington University
Washington, D. C. February 1965, 41 pp.

Description of the George Washington University Medical School building program translating its educational objectives into laboratory, classroom, and clinic. It is a design to increase efficiency by utilizing new communication techniques and by clustering related facilities to provide the necessary interrelationships among the four building units discussed. In the new medical school plan there are five building units: commons for general facilities, medical science for instruction and research, resources for the library, clinics, and doctors' office building. Highlights of the design include a permanent support and service core running the length and height of certain buildings. A discussion of laboratory types favors the "multidiscipline-unit." Types of lecture-lab combinations are presented allowing for quick changes. A more practical laboratory bench was thereby needed to fit the new lecture-lab concept. Standing, sitting, and microscope study can be done comfortably from a single bench. The use of alcoves encircling the lecture-lab area allows students to circulate through the various alcoves, each of which is set up for separate learning functions. In the clinics a strong attempt is made to sophisticate access to, circulation of, and communication with care units, students, doctors, and supply while concurrently providng a degree of separation. The appendix consists of the definition of instructional needs. (F. E. I.)

354 PLANNING AND EQUIPPING BUSINESS EDUCATION CLASSROOMS
California State Department of Education
California State Printing Office
Sacramento, California. 1961.

A guide designed primarily for use in planning business education facilities for junior high schools, and four-year and senior high schools. It may be used to advantage also in planning facilities for junior colleges and for adult education purposes. Attention is given first to basic considerations and general procedures in the planning process. The need for group involvement and careful development of philosophical objectives are discussed. The role of the various levels of government in planning is also covered. Of special interest are the examples of forms ABC & D of the California Space Adequacy Survey forms. These forms offer a detailed mathematical approach for determining proper allocation of teaching space. Educational specifications for the business education suite are briefly defined and then spelled out in detail for each special area in the suite. Lists of equipment are also presented for each area. The publications includes pictures of business education facilities and equipment. The final one-third of the document is devoted to planning junior college business education classrooms. (G. R. R.)

355 PLANNING AREAS AND FACILITIES FOR HEALTH, PHYSICAL EDUCATION, AND RECREATION
The Athletic Institute
Merchandise Mart
Chicago, Illinois 60654. 1965, 272 pp.

A Guide resulting from national workshops held in 1946, 1956, and 1965. The 1965 workshop revised the Guide from the standpoint of cooperative planning, recent advances in facility planning and construction, and future needs. Contains concrete information as well as suggestions of material value to all planners of areas and facilities for athletics, recreation, outdoor education, and physical and health education. Contains many diagrams and sketches, checklists, and photographs. Material is presented under the following four headings: (1) Basic Concepts, (2) Outdoor Areas and Facilities, (3) Indoor Facilities, and (4) Aquatic Areas and Facilities. (P. J. O.)

356 PLANNING FACILITIES FOR SPECIAL EDUCATION
Utah State Department of Public Instruction
223 State Capitol
Salt Lake City, Utah. October 1960, 31 pp.

A guide for planning facilities for the special education of five categories of children: (1) Trainable children. Suggestions are made for facilities for seven activities in any or all of which trainable children may engage: (a) homemaking, (b) academic learning, (3) audio-visual, (d) arts and crafts, (e) music and dramatics, (f) physical education, (g) resting. (2) Educable children, whose curriculum involves academic training and social, creative, motor, and communicative skills. A self-contained classroom or a suite of rooms where a multi-purpose room serves two or more classes may be used. For the self-contained classroom specific areas are suggested for the teacher, for academic training, music, home-living, and manual skills, art, and science. (3) Children with motor handicaps. It is recommended that if a complete self-contained unit for them is provided including classrooms, corridors, therapy rooms, toilets, and administrative section it should allow approximately 240 square feet per pupil--three times as much as for a normal student. (4) Children with speech and hearing handicaps: suggestions are made regarding the amount of space, location, treatment of the space, and furniture and equipment for facilities for these youngsters. (5) Partially seeing children, for whom a suitable visual environment is recommended. Suggestions are made regarding facilities for three types of program--cooperative, resource, and itinerant--for helping these children. (S. A. M.)

357 PLANNING GUIDE FOR VOCATIONAL-INDUSTRIAL AND VOCATIONAL-TECHNICAL BUILDING FACILITIES FOR COMPREHENSIVE HIGH SCHOOLS
University of State of New York
Division of Educational Facilities Planning
Albany, New York. April 1964, 34 pp.

A guide for the use of those who have responsibility for planning vocational-industrial and vocational-technical education building facilities with pertinent facts considered by specialists as basic in the determination of desirable practices. This bulletin has no ready-made answers for shop planning but formulas have been developed in estimating the number of classrooms and recommendable areas of shops. (M. W. B.)

358 PLANNING SCIENCE FACILITIES FOR SECONDARY SCHOOLS
University of State of New York
Division of School Buildings and Grounds
Albany, New York. 1960, 16 pp.

A publication to assist educators in their approach to planning new school buildings and facilities of instruction. The students in the junior high school and upper elementary levels are eager to experiment and solve problems of special interest to themselves. All science rooms with adjacent classrooms should have water, sewer, gas and electrical services roughed-in to points of anticipated need. It is essential that all rooms in which science is taught have an instructor's demonstration desk. The pamphlet describes the size and facilities necessary for the general science room, the darkroom, the biology room, the physics room, the chemistry room. Two diagrams and floor plans are included; one of the general purpose room and the preparation storage area for that room. (M. W. B.)

359 Powell, G. G. and G. M. Walker
AGRICULTURAL MECHANICS INSTRUCTION IN SECONDARY SCHOOLS
(ORGANIZATION OF LABORATORY WORK AREAS)
Mississippi State Board for Vocational Education
Jackson, Mississippi. January 1964, 52 pp.

Recommendations for expanding and intensifying the agricultural mechanics program in Mississippi. Attention is given to the following subject matter areas: (1) agricultural construction, (2) agricultural maintenance and repair work, (3) electricity and electric motors, (4) water systems, (5) tractors, auxiliary engines, and trucks, (6) agricultural machinery, and (7) soil and water technology. Diagrams for suggested facilities are included. Scope and content of the above subject matter areas are outlined. (H. H. C.)

360 Powers, Alice
HERE'S HOW TO DESIGN A SCHOOL CAFETERIA
School Lunch Journal
American Food Service Association
Denver, Colorado. November-December, 1964, pp. 44-53.

Discusses the requirements and specifications for designing a system of "unit kitchens." Reasons for preferring the unit to the central kitchen are outlined. Detailed analysis of the factors involved in designing and equipping such facilities is included. Photographs are included. (H. H. C.)

361 Robertson, Nan
AIR STRUCTURES FOR SCHOOL SPORTS
Educational Facilities Laboratories
New York, New York 10022. May 1964, 25 pp.

A feasibility study on using air structures to house indoor sports. The Forman School of Litchfield, Connecticut, needing an inexpensive way of providing all-weather athletic facilities came up with the air structure. Backed by a grant from EFL, the Architects Collabarative of Cambridge, Massachusetts was commissioned to study the pros and cons of air structures and rule on the feasibility of using them to house its proposed indoor sports facilities. At the same time, the school began conducting its own on-the-spot experiments with bubbles. Based on the results of the study and Forman School's experience the bubble can be a reliable and practical enclosure for physical education and sports. Positive advantages of the air structure are: (1) It costs but a fraction of the price of a conventional building. (2) It is inexpensive to heat since there is no mass to heat--only air. (3) It is inexpensive to light. (4) It provides an unobstructed clear span. (5) It is easy to put up and take down. (6) It is easily cleaned and requires little maintenance. (7) The safety factor is excellent. (8) Properly engineered with respect to air pressure for location, entrance air locks, anchorage, drainage, interior obstructions, and strength and durability of fabric, it is completely dependable. The principal disadvantage is the limited life expectancy. However, this should be greatly extended through the use of materials now being promised which will resist the ultraviolet rays of the sun--the main cause of deterioration. (F. E. I.)

362 THE RUBY S. THOMAS ELEMENTARY SCHOOL
Clark County School District, Las Vega, Nevada
School Planning Laboratory
Stanford University
Stanford, California. 1965, 13 pp.

Experimental ungraded elementary school geared around four teacher teams. Planned in cooperation with SPL, Stanford and Western Regional Center for EFL, Julius Gabriele and Associates, Architect. Plan is simple, economical, and flexible. Consists of 6 carpeted rooms or "pods" approximately 4,000 square feet each. "Pods" have no dividing walls. Definitive description of how team work is given. Plan includes instructional materials center. Schedule completely flexible. Plan to data process pupil achievement profiles. Objectives realized and reported are small groups represent homogeniety of skill, teacher planning keep teachers abreast of individual progress and needs, great flexibility, more individual attention to pupil, greater self-help, and others. Preplanning in summer 1964 included teaching teachers in the morning with teachers teaching pupils in the afternoon. Program took place at Nevada Southern University for four weeks. Orientation included meeting with parents before school was started. (C. H.)

363 Saetveit, Joseph G. and Hick, Basil L.
PLANNING THE MUSIC SUITE
New York State Education Department
Division of School Buildings and Grounds
Albany, New York. 1963, 24 pp.

This is one of a series of pamphlets designed and published by the State Education Department and the University of the State of New York. Each pamphlet relates to some specific area of a school plant and its purpose is to aid school officials and architects in their planning of these areas. Planning the Music Suite is designed to help school officials, architects, and others in arranging music facilities for new buildings and improving facilities in existing buildings. No dimensional layouts are presented but emphasis is placed on the location of the music suite, its construction, and the sound and acoustics factors. Types and sizes of music areas are discussed along with the importance of lighting and room relationship. A listening room is a new innovation and should be located near the record library or the student lounge. A short treatise is given to the heating, ventilating, and humidity control of music rooms. (A. B. G.)

364 Schlessinger, Fred R. and Richardson, John S.
SCIENCE FACILITIES FOR OUR SCHOOLS K-12
National Science Teachers Association
Washington, D. C. 1963, 28 pp.

A report concerning the third of the requirements for learning in science--the facilities. It is an attempt to take both the philosophy and curriculum of the science program and translate them into terms of space and facilities in the actual physical plant. The study includes a section on nine current trends in science education; twenty principles for planning science facilities; facilities for the elementary school science--including objectives, trends, facilities in self-contained classroom, science center, and laboratories; facilities for junior high school science--limited to 24 to 30 students and a list of 17 suggested features; facilities for the small secondary school using a multipurpose science room and listing features and equipment needed for the program; senior high school science facilities--the science suite, facilities for the biological sciences, special needs for the new curricula, facilities for chemistry, new physics, and advanced science courses; impact of the NDEA, Title II on science facilities; a summary and conclusions of the other studies; recommendations and implications; and a checklist for schools to use in planning and improving facilities. (M. N. B.)

365 SCIENCE FACILITIES FOR MISSISSIPPI SCHOOLS
Mississippi State Department of Education
Jackson, Mississippi. May 1962, 77 pp.

Provides suggestions for construction of new science departments and for planning improvement of existing facilities. Organization of areas is (1) general principles for planning science facilities, (2) special facilities, (3) general standards for laboratory furnishings, (4) remodeling the science laboratory, and (5) audiovisual facilities. Area suggestions are divided into elementary and secondary level provisions. The appendices include (1) a checklist of facilities for teaching general science in grades 7, 8, and 9, (2) checklist for facilities for teaching biology, and (3) checklist for facilities for teaching chemistry. Photographs of various classroom facilities are provided. (H. H. C.)

366 Shores, Louis
THE JUNIOR COLLEGE LIBRARY
American Association of Junior Colleges
Washington, D. C. March 1966, 4 pp.

Discussion of the trends and operation of the college library. Several colleges are providing multiple libraries for each college division. Instead of tables with chairs for from six to twelve students, individual carrels are advocated. Floors, previously tiled with rubber or linoleum, are now being carpeted. In addition to compact carrels for students, more generous-size ones should be provided for faculty, to perform double duty as study and office. Several other innovations are discussed. (H. E. J.)

367 SPACE AND EQUIPMENT TECHNIQUES FOR FOOD SERVICE EFFICIENCY
American School and University
737 3rd Ave.
New York, New York. May 1965, 3 pp.

Reviews development of new kitchen equipment and several implications for school in planning for food service. Some of the new equipment is discussed as: (1) convection ovens, (2) high-speed cutting-mixing machines, (3) high-speed steamers, (4) blancher water cookers, (5) heavy duty, infrared broilers, (6) shapers, (7) cookie makers, (8) griddles, (9) poultry cutters, etc. Reference is made to the characteristics of new kitchens at the U. S. Naval Academy, Annapolis, Maryland; Kent State University, Kent, Ohio and the University of Nebraska, Lincoln, Nebraska. (H. H. C.)

368 SPACES DESIGNED FOR ADMINISTRATIVE USE
School Management
22 W. Putnam Ave.
Greenwich, Connecticut. July 1965, Vol. 9, No. 7

Reviews five examples of school plans designed to recognize the need for better planned administrative space. Schools reviewed include Newark, Ohio, High School; Greenville, North Carolina, High School; Administration Building, Parkrose, Oregon; Education Center, Columbia, South Carolina; and the Education Center, Manhattan, Kansas. In summary, two key factors in designing administrative spaces are given consideration. The first is function--what these spaces are for and how they are to work. The second is feeling--the kind of impression the spaces are to make on the people who should be using them: teachers, parents, and regular central office personnel. Photographs and floor plans are included. (H. H. C.)

369 Steer, M. D and T. D. Hanley
CLINIC-LABORATORY DESIGN BASED ON FUNCTION AND
PHILOSOPHY AT PURDUE UNIVERSITY
Journal of the American Speech and Hearing Association
Danville, Illinois. December 1960, 5 pp.

The speech and hearing training, research, and services at Purdue University, West Lafayette, Indiana are reviewed with reference to the design and organization of the new clinic facilities in Heavilon Hall. In summary, the clinic occupies the lowest floor level in the building. On the northwest is the administration area, with reception room and senior staff offices. The graduate clinicians' office, west of the director's office, houses 29 graduate students, each with assigned desk space and lockable wallboard. In the southwest quadrant service and training functions are combined in applied speech correction. The southeast quadrant is designed primarily for research applications. Training and research are the principal activities in the northeast quadrant of the clinic. The northwest section contains the auditory training, photograhic room, the prosthetics laboratory, audiological service and research, and the shop areas. Diagrams and floor plan sketches are provided. (H. H. C.)

370 Stetson, G. Arthur, and James P. Harrison
A JUNIOR HIGH SCHOOL DESIGNED FOR TEAM TEACHING
School Board Journal
233 Central St.
Evanston, Illinois. 1960, 5 pp.

Building facilities definitely aid or limit what can be done in educational programming. The West Chester Joint High School Board, in a display of confidence in team teaching, has constructed a modern junior high school to accommodate this philosophy. Three ideas were kept in mind and worked out with the architect before the building was started: (1) To provide a "school within a school." This was resolved by a wing for each grade of the junior high school in which the pupils would meet for their four academic classes. These wings join the special-services unit where pupils go for art, library, homemaking, science, and health. (2) To provide an assembly area that would be low enough in cost and multiple use that the board would approve it. The cafeteria provided the assembly space. Cafeterias had been building before; that is, cafeterias had been built with a stage at one end to serve as an auditorium. This arrangement had never been made use of because the acoustics were not good. This time the process was reversed. An auditorium was built and a cafeteria was placed in it. The arrangement has done two things. First, it has used a single space for two purposes that formerly required two separate spaces. Second, it has saved the taxpayer many thousands of dollars. (3) To provide for team teaching. Team teaching helped to individualize the program. Four teachers were given rooms together--two rooms on each side of the hall. A conference room for the team of teachers to use on school time was provided near the office, guidance suite, and library where all necessary records are easily available. (T. E. J.)

371 SUGGESTED FACILITIES FOR SPECIAL CLASS PROGRAMS
School Building Assistance Commission
Massachusetts State Department of Education
Boston, Massachusetts. 1965, 13 pp.

Makes suggestions for school building facilities for emotionally disturbed and mentally retarded children. Specific areas discussed are (1) special education, (2) emotionally disturbed children, (3) the educable children, (4) the trainable children, and (4) the multiple handicapped children. (H. H. C.)

372 10 DESIGNS - COMMUNITY COLLEGES
Department of Architecture
Rice University
Houston, Texas. 1962, 100 pp.

Report concerning facilities for two-year community colleges. New kinds of institutions, such as the community college, must have new kinds of facilities. The purpose of this report, and the Rice University Design Fete which produced it, is to suggest what such facilities might be. Ten outstanding architects and fifty advanced students of architecture from nine universities participated in the study. The study considered several areas of the United States. The procedures of the study are discussed. Drawings and floor plans are included. (H. E. J.)

373 TORONTO'S PARKWAY VOCATIONAL SCHOOL
School Board Journal
233 Central St.
Evanston, Illinois. 1965, 5 pp.

A description of the new Parkway Vocational School at Toronto, Ontario, Canada, planned to provide vocational courses for boys of high school age, in the widest areas, from barbering to warehousing and stock-keeping. The school, located on a 6½-acre site, consists of three main blocks, of which the two-story north contains the shops for heavy machinery; the center block, which is six stories high, contains the classrooms and laboratories and is served with passenger and freight elevators; the south block embraces the large units of the swimming pool, gymnasium, the music rooms, the auditorium, and supplementary rooms. Clever use has been made of the sloping site for entrances, ramps, staircases, enclosed fire stair, and a pedestrian bridge. A unique feature of the building is its heating plant which is located on the roof. Floor plans are included. (H. E. S.)

374 VOCATIONAL TECHNICAL FACILITIES CONFERENCE, 1966
Florida State Department of Education
Tallahassee, Florida. 1966, 64 pp.

This bulletin is the report of a vocational technical facilities conference. It contains manuscripts of speeches presented at the conference and committee reports which includes suggestions for planning facilities for specific vocational technical curriculums. Facilities described include those needed for agriculture, business, and distributive education, health occupations, home economics, food services, technical education and trade and industrial education. (C. W. M.)

375 Weinstock, Ruth
PROFILES OF SIGNIFICANT SCHOOLS, HEATHCOTE ELEMENTARY SCHOOL,
SCARSDALE, NEW YORK
Educational Facilities Laboratories, Inc.,
477 Madison Avenue
New York, New York. September 1960, 32 pp.

The Heathcote Elementary School of Scarsdale has certain stimulating features that are worthy of study, some of which might be incorporated in any school building plan. The 5,000 or more families of the city in 1960 had an average annual income of $16,458 after taxes. Most of these families include professional and business executives who demand a good educational system and are willing to pay for it, even though it costs them over $1,000 per year for each school child. Outstanding features of the Heathcote school are (1) the natural beauty of the site of 22 acres of rolling, wooded land, (2) the blending of the six buildings with the landscape which suggests that "it all grew up together," and (3) the use of color in building materials to blend with the trees, the earthr, and the sunlight. The architects tried to get away from a *school idea* and into a physical environment that children would love. Small educational neighborhoods and flow of space are emphasized. The use of the outdoors as a resource center is stressed. Hexagonal classrooms, four to a cluster, grouped around a central foyer, and leading to special activities cores by separate corridors give the children their own units and a feeling of hominess. This arrangement makes it easier to move children from one class to another according to the pupils' individual needs and capacities than does the traditional building. The Heathcote school is so flexible it need not fear change. (A. B. G.)

376 Whitney, Frank L.
BASIC STEPS IN DESIGNING SCIENCE LABORATORIES
American School and University
737 3rd Ave.
New York, New York. May 1965, 5 pp.

Reviews basic steps in designing science laboratories as (1) providing adequate communication between the designer and the scientists or teachers who use the laboratory, (2) basic value of the seminar in focusing attention on the main concepts of the building, (3) consideration of flexibility in the design of mechanical and electrical systems, and (4) the importance of planned efficiency in terms of assigned and gross space. In summary, the well-designed laboratory will aesthetically and honestly express its intended use and function. This is the only practical definition of "good design" available. (H. H. C.)

VII. OPERATION AND MAINTENANCE OF PLANT

377 Bartlett, Perry
NEW PRODUCTS IN THE CUSTODIAL FIELD
Proceedings Forty-fourth Annual Convention
Association of School Business Officials of the United States
and Canada
2424 Lawrence Avenue
Chicago, Illinois. 1958, 11 pp.

Reports on trends in two areas of custodial products: pesticides and floor products. Insecticides are included in two broad groups; the space and residual sprays. Each group's characteristics and recommended uses are presented. Recommendations for treatment and maintenance of floors were given in the following areas: (1) preparation of specifications for floor sealers, (2) characteristics of floor waxes; and (3) the latest trends in emulsion waxes. Included were recommendations concerning the use of new products for maintenance of vinyl, asphalt, and rubber tiles. (H. H. C.)

378 Bowles, Albert M. Jr.
BUILT-UP ROOFING AND WALL MAINTENANCE
Proceedings of the School Facilities Conference
University of Houston
Houston, Texas 77004. 1961, pp. 29-34.

Treatise on the types of roofs and walls, and how to maintain them to prevent excessive costs. No new low cost, attractive roof or wall materials have been very successful, and all types and kinds continue to require costly maintenance. Although there are some that require fewer man-hours in installation and maintenance, there is rise in unit labor costs. Description of wall types, their composition, their strengths and their weaknesses, their proper repair, and maintenance. Low maintenance costs result from the proper selection of materials, correct installation, detailed records, and good fundamental inspection service. (A. B. G.)

379 Corwin, Ralph
BUILDING MATERIALS STANDARDS WHICH REFLECT LONG-TERM
MAINTENANCE AND OPERATIONAL SAVINGS
1962 Annual Proceedings
Association of School Business Officials
Chicago, Illinois. 8 pp.

Report on general causes of maintenance problems and description of several types of new materials that lower maintenance expenses in such building areas as corridors, showers, passage-ways, and door and window construction. A wide range of materials is discussed. (H. H. C.)

380 EFL TAKES A LOOK AT AUDITORIUMS
New Life for Old Schools, Newsletter No. 10
Research Council of the Great Cities Program for
School Improvement
Chicago, Illinois. August 1966, 4 pp.

A report on the design recommendations for a partially dormant auditorium, that of Roosevelt High School, St. Louis, Missouri. The school has a growing enrollment and an inability to expand onto adjacent land. Its 2100-seat auditorium is a Gothic space located at the heart of the building. The 644-seat balcony is virtually dormant in its present state. The proposed plan for alteration can increase student capacity of the school by 480 places, turn a little-used but handsome auditorium into an active group of spaces, retain the dignity of an architectural classic, and cost an estimated $691,000 -- substantially less than the $1,440,080 calculated for construction of an equivalent addition. The plan involves division of the auditorium horizontally at the balcony level. The upper level of this division would become the new auditorium and the former main floor would be divided vertically into three permanent lecture rooms. Other alterations would rearrange other facilities. (S. A. M.)

381 Engman, John D. and others
SCHOOL PLANT MANAGEMENT FOR SCHOOL ADMINISTRATORS
Gulf School Research Development Association
3801 Cullen Boulevard
Houston 4, Texas. 1962, 234 pp.

For those school officials, including teachers and others preparing for administrative positions, a well-defined and diversified listing of topics pertaining to the managerial and executive decision-making phase of school administration are discussed, enlarged, and explored thoroughly by qualified writers, most of whom are in actual jobs. While the setting is a specific geographical area, nevertheless the sage comments and actual experiences are pertinent to school districts, large or small, in any area. Of particular significance is the trend of thought that in line and staff organization, the status of collateral and auxiliary services occupy similar weight to that of curriculum and personnel. Highly informative in content. The

15 chapters of this document include topics such as: Personnel Policies, Custodial Services, Operational Maintenance, Preventive Maintenance, Plant Utilization, Community Relations, Modernization, and School Business Office. There are 16 figures which include flow charts, inventories, order forms, applications and appraisal forms. (T. S. G.)

382 Grauke, Olie C.
CONSTRUCTION PROBLEMS IN MODERNIZING FOOD SERVICE FACILITIES
Proceedings of the School Facilities Conference
University of Houston
Houston, Texas. March 1961, pp. 78, 79.

A brief treatise in errors resulting in a short planning period for the construction of school food facilities and some advantages that might be gained in long-term planning. A plan should be completed before any urgent need arises. It should fit the project rather than what other schools have and do. Layout and equipment should not be determined solely by the architect; he must be given adequate information. (A. B. G.)

383 THE HIGH SCHOOL AUDITORIUM - 6 DESIGNS FOR RENEWAL
Educational Facilities Laboratory
477 Madison Avenue
New York, New York 1002. 1967, 35 pp.

A portfolio of six practical and boldly innovative designs for renewal accompanied by 23 pages of introductory explanation. Heading the list of space requirements in today's schools large-group instruction areas with adjacent faculty planning space, conference and seminar rooms, and resource storage areas. One of the greatest space-wasters is the large conventionally designed auditorium. Most of these halls are inadequately equipped, improperly lighted, and too large for either instructional or assembly purposes. This study focuses on exploring design ideas, in representative situations, for the retrieval of space from six partially dormant auditoriums and for the conversion of this space to benefit the changing educational program. (P. J. O.)

384 HOW TO MODERNIZE YOUR OLD BUILDINGS
School Management
22 W. Putnam Ave.
Greenwich, Connecticut. May 1960, 7 pp.

An article utilizing the experience of the Wilkinsburg, Pennsylvania school district to illustrate advantages of a preplanned and scheduled building maintenance and rehabilitation program. A procedure involving (1) analysis of existing buildings, (2) establishment of a priority system for maintenance and repair, (3) specification of a rehabilitation program and a time period for its accomplishment, (4) development of a schedule for regular preventive maintenance, and (5) arrangement for a rigid, annual inspection of each building, was developed. The district is now operating upon such a planned program and reports good results and dollar savings. (C. S. B.)

385 HYDE PARK HIGH SCHOOL, CHICAGO
Research Council of the Great Cities Program
for School Improvement
New Life for Old Schools Newsletter No. 9
Chicago, Illinois. June 1966, 8 pp.

A newsletter containing the architectural, structural, and mechanical requirements for Hyde Park High School in Chicago, Illinois. The problem was to design a facility that would maintain all existing exterior walls and use them to create new areas; to create new spaces within the existing building and totally new spaces upon the building from fire resistant material. A schematic of the existing floor plans of the four floors is included and the design plan for the remodeling of each floor is included. The center of the program is based on a resource and independent study center. (M. W. B.)

386 THE INTERMEDIATE SCHOOL
The Research Council of the Great Cities Program
for School Improvement
5400 North St. Louis Avenue
Chicago, Illinois 60625. 1967, 64 pp.

The results of a design competition planned to introduce into a schoolhouse built for a traditional concept of education, the space and flexibility required to accommodate new concepts of the learning process. This report includes a summary of required educational facilities and the special concerns of these facilities such as storage space, acoustics, divisible areas, laboratories and demonstration areas, and flexible auditorium space. (P. J. O.)

387 Jackson, R. Graham
MATERIALS FOR MODERNIZATION
Proceedings of the School Facilities Conference
University of Houston
Houston, Texas. 1961, pp. 65-70.

Remarks on the need for integrating modernization into the total, long-run school plan. The main body of the speech is devoted to presenting and evaluating various materials that are used in modernizing the school plant. Particular emphasis is given to interior partitions, flooring, and ceilings. The presentation closes with a plea for seeking skilled advice when school boards undertake modernization programs. (G. R. R.)

388 Johnson, Charles A.
MECHANICAL EQUIPMENT MAINTENANCE
Proceedings of School Facilities Conference
University of Houston
Houston, Texas. March 1961, 4 pp.

Outline of kinds of maintenance problems arising from change of usage to which space and equipment is put, from failure to standardize mechanical equipment, from earth movement, and from efforts to reduce painting costs. In conclusion, it stresses the importance of having made contracts for servicing and repairs with reliable firms and individuals before the actual need arises. (C. A.)

389 Moore, Harvin C.
MODERNIZATION OF AND ADDITIONS TO SCHOOL PLANT FACILITIES
Proceedings of School Facilities Conference
University of Houston
Houston, Texas 77004. 1961, pp. 62-64.

The fact that older areas in cities across the country are being restored is cited as a reason for needing to modernize old school buildings. Population increases and cost of land acquisition are also reasons for considering modernization of existing buildings. Lists and describes the conditions of many specific aspects of the school that should be studied. Among these are: chalkboards, floors, P. A. systems, cafeterias, libraries, physical education facilities, shop facilities, play areas, and fire and safety regulations. The need for competent technical assistance and a coordinated program toward modernization is stressed throughout the presentation. (G. R. R.)

390 Mc[illegible]nell, Harold E.
QUALITY CONTROL OF EDUCATION THROUGH MAINTENANCE AND REPAIR
Proceedings of School Facilities Conference
University of Houston
Houston, Texas 77004. 1961, pp. 14-18.

Schools have furnished many worthwhile ideas and concepts to industry in the past. Today industry has two very important technological improvements to suggest to our schools. These are the factors of efficiency and quality control in maintaining schools. Preventive maintenance and early repair are the two major aspects of keeping the school plant environment at a reasonably constant level of quality. One of the most important items to maintain at a high level of efficiency in any school building is the electric circuit system. This depends largely upon the recognition of the functional purpose of each circuit. Another item of major importance is to keep all original documents of every sort in a safe and secure storage place. This includes such items as all original working drawings, specifications, maintenance manuals, and instructional booklets. Several copies of a master index of these original documents should be available to those whose direct responsibility is to keep all buildings in a reasonably high level of operating efficiency. The major problem is to see that all withdrawals are signed for and returned at the end of the stated time used. A final suggestion is that a periodic inspection is made of all major items of equipment necessary to keep the building in a high level of performance. (C. S. B.)

391 New Life for Old Schools Newsletter
THE LOUISVILLE KENTUCKY PROGRAM
Research Council of the Great Cities Program for
School Improvement
Chicago, Illinois. February 1966, 4 pp.

Reviews the educational specifications relationship to modernization in the junior high school program in Louisville, Kentucky. Modernization program includes a use and re-use of the existing space in buildings about 40 years old. Areas discussed are: (1) new uses for corridors; (2) expansion of kitchen, library, and office space; and (3) additions of shop and instrumental music areas. (H. H. C.)

392 New York State Commission on School Buildings
WHAT TO DO ABOUT OLD SCHOOL BUILDINGS
State of New York Commission on School Buildings
Albany, New York. 1954, 50 pp.

Presents a study of basic considerations in determining the disposition of substandard buildings. Considerations are divided into six general areas: (1) possibility of abandonment without modernization; (2) suitability of site; (3) structural adequacy; (4) conformance with standards; (5) cost comparisons; and (6) other considerations. Appendix includes a checklist of substandard or obsolescent characteristics of school buildings which can be applied to a building when modernization or replacement is being considered. (H. H. C.)

393 **PITTSBURGH DESIGN STUDY - THE LIBERTY ELEMENTARY SCHOOL**
The Research Council of the Great Cities Program for
School Improvement
5400 North St. Louis Avenue
Chicago, Illinois 60625. 1967, 28 pp.

The results of a study of the problems and solutions connected with the modernization of outmoded school plants. As part of this study a cooperative program was sponsored by the Pittsburgh Public Schools, the Department of Architecture, Carnegie Institute of Technology, and the Research Council of the Great Cities Program for School Improvement. The eight-block area of the immediate vicinity of Liberty School was selected for detailed analysis and design as well as Liberty School itself being chosen for rehabilitation and reconstruction. Many layouts are presented with explanatory material included to make clear the reasoning behind the changes that are shown. The changes were made with these goals in mind: (1) educational excellence and (2) racial and cultural integration. (P. J. O.)

394 Price, Dana
WHEN AND WHAT TO MODERNIZE
Proceedings of School Facilities Conference
University of Houston
Houston, Texas. 1961, pp. 71-74.

As the third speaker on a panel discussion of "Modernization of School Plant Facilities", Mr. Price discussed the modernization of the mechanical and electrical equipment of a school plant. After a brief discussion of when a school board should consider modernizing mechanical and electrical equipment the speaker explored the specifics of lighting, heating and ventilation. Technical data on foot candles, types of light fixtures, and the importance of air conditioning in modern school buildings are presented. The presentation closes with the recognition of the need for research on air conditioning in existing buildings. (G. R. R.)

395 **REPORT OF A SCHOOL IMPROVEMENT WORKSHOP**
The Research Council of the Great Cities Program
for School Improvement
5400 North St. Louis Avenue
Chicago, Illinois. June 1965, 96 pp.

Report from the workshop held on Saturday, May 1, 1965, at the Statler-Hilton Hotel, New York City for representatives of the Research Council of the Great Cities Program for School Improvement. The manual is divided into the following sections: (1) A Survey of the Problem; (2) The Contractor Looks at Remodeling; (3) A Look at Three Programs (Milwaukee, San Francisco, and Baltimore); (4) A Workshop Sketch Book by C. William Brubaker, Architect; (5) Reports from other cities (Boston, Buffalo, Chicago, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburg, St. Louis, and Washington, D. C.); (6) additional tables, bibliography and credits. (M. N. B.)

396 Roberts, Charles
PROBLEMS OF OBSOLESCENCE
Proceedings of School Facilities Conference
University of Houston
Houston, Texas. March 1961, 7 pp.

Discusses six phases of obsolescence in school facilities (1) rehabilitation, (2) remodeling, (3) repairing and providing equipment, (4) improving sites, (5) a general face-lifting, and (6) adaptability. Under rehabilitation the topics of lighting, heating, ventilation, color harmony, reflooring, acoustical treatment, and cost are covered quite thoroughly with the rejoinder that "many people in the construction business recommend that a building be abandoned when the refurbishing cost is more than 40 percent of the replacement cost." With new classroom media such as foreign language laboratories, teaching machines, television, and team teaching, it is paramount that facilities be adequate to house them. Not enough time in planning results in lack of adaptability, expansibility, and flexibility. (A. B. G.)

397 Sessions, E. B.
REHABILITATION OF EXISTING SCHOOL BUILDINGS OR CONSTRUCTION OF
NEW BUILDINGS? Research Bulletin No. 2
Bureau of Educational Research
Ohio State University
Columbus, Ohio. 1964, 16 pp.

Presents three general areas for consideration: (1) rehabilitation of existing school buildings, and (2) rehabilitation of specific buildings, and (3) additional considerations. Criteria for analyzing the first area was: establishment of school building policies concerning site and location obsolescence, population changes, community characteristics, land use, industrial expansion, apartment dwellings, traffic, and transportation facilities. Part two's criteria for rehabilitating specific buildings were (1) safety, (2) maintenance, (3) operation and custodial-time considerations. The conclusions listed considerations relating to public relations and financial subjects. (H. H. C.)

398 Skelly, A.
NEW PRODUCTS FOR OLD SCHOOLS
The Research Council of the Great Cities Program
for School Improvement
Chicago, Illinois. January 1967.

Brief outline of certain problems to be considered in modernizing old schools. Includes the effective use of new products to create an environment adapted to today's educational program requirements as well as those of the future and the need for research involving the defining of educational performance specifications by the school staff which would guide industry in the development of new products satisfying these specifications. Briefly treated are problems of rehabilitation and modernization of old buildings with reference to floors, demountable walls, hearing, ventilating, cooling, lighting, and ceilings. (C. O. W.)

399 Stevenson, Frank V.
MAINTENANCE OF FLOORS
School Facilities Conference
University of Houston
Houston, Texas. March 1961, 2 pp.

Emphasizes the importance of knowing types of floors and their proper maintenance. No names of materials, finishes, or costs are mentioned; instead, emphasis is placed on advanced programming for floors, their installation, and maintenance. (A. B. G.)

400 A $2,000,000 ARCHITECTURAL DESIGN COMPETITION FOR NEW YORK CITY
The Research Council of the Great Cities Program of School Improvement
5400 St. Louis Avenue
Chicago, Illinois 60625. 1967, 1 page.

A competition approved by the American Institute of Architects for the Conversion of a junior high school to house innovative intermediate school concepts has been announced by the Board of Education of New York City. It is the hope of the Board that the architectural competition will introduce into a traditional school building the space and flexibility necessary to carry out the concepts of the learning process which have been developed for an intermediate school by the superintendent and his staff. This competition is one of a series sponsored by the Educational Facilities Laboratories under the New Life for Old Schools program. (C. O. W.)

401 UNUSUAL "WRAP-AROUND" ADDITION ENHANCES PREWAR HIGH SCHOOL BUILDING
School Board Journal
233 Central St.
Evanston, Illinois. 1966, 5 pp.

Shows how a school solved its enrollment problems by the use of "wrap-around" additions. This wrap-around unit is a space saver; extended corridors are used to connect the main building to the wrap-around unit. The problem was how to provide an addition that would have access to all three wings of the existing fan shaped building within the limitations of a site that made it unfeasible to extend classroom wings into existing athletic and parking facilities on the 27-acre site. The total solution to the problem is discussed. Floor plans are included. (H. E. J.)

402 Wanska, John R.
MAINTENANCE BEGINS BEFORE INSTALLATION
School Board Journal
233 Central St.
Evanston, Illinois. July 1965, 1 p.

In summary, the following considerations should be made when planning future school lighting maintenance costs and programs: (1) choose the light source which is applicable, (2) fixtures should be chosen that have lighting comfort, efficiency, and ease of maintenance; (3) an electrical system of single phase, three phase, or a combination of the two, should be planned for future expansion; (4) an early budget for maintenance is important from the beginning of the school plant completion; (5) a detailed record of the lamps purchased, fixtures in use, and wiring layout should be provided; (6) a file on all operating instructions should be obtained in duplicate, one for the business manager and the other for the maintenance supervisor; and (7) there should be a continuing general education program, showing how the lighting components operate and are improved upon. (H. H. C.)

403 Wells, James
HOW TO PROGRAM SCHOOL BUS MANAGEMENT
School Management
22 W. Putnam Ave.
Greenwich, Connecticut. May 1965, 2 pp.

Bus maintenance scheduling is handled with varying degrees of success, or lack of it, by school districts throughout the United States. In Newtonville, New York data processing provides the total control of bus maintenance scheduling and performance using MI/DAC data processing system developed by Mobil Oil Company. This system also gives the district as an added dividend comprehensive cost accounting data that saves hundreds of dollars annually; and is a resource for answering questions that transportation men are seeking solutions to such as when does it become more costly to operate an old bus than to buy a new one. The data processing used is the same one used for attendance and payroll accounting and is used to: (1) schedule regular lubrication and preventive maintenance inspections; (2) make sure that all required work gets done; (3) assemble maintenance cost data on each bus to facilitate accurate cost analysis; (4) arrange schedules to equalize inspection load throughout the year by setting up a weekly schedule. (M. N. B.)

404 Wells, Weldon S.
A STUDY OF PERSONALITY TRAITS, SITUATIONAL FACTORS, AND LEADERSHIP ACTIONS OF SELECTED SCHOOL MAINTENANCE SUPERVISORS
North Texas State University
School of Education
Denton, Texas. January 1964, 111 pp. University Microfilms 64-7762

The purpose of this study was to determine leadership behavior factors in school maintenance supervisors which could be used to predict leadership behavior of men being considered for maintenance supervisors. Fifty-four maintenance supervisors in a large metropolitan area of the southwestern United States participated in the study. The data were gathered from several well-known scales and measures of various aspects of leadership behavior. Other data were collected from the Leadership Behavior Description Questionnaire and an administrative rating scale developed by the researcher after consulting with a jury of experts in school maintenance. Coefficients of correlation were calculated to determine the degree of relationship between the different variables. High positive correlations were found to exist between many aspects of personality relating to efficient supervisors. The implications are that use of several well-known measures of various aspects of personality and leadership can be used to predict which persons from a group of maintenance workers applying for the job of maintenance supervisor have better chances than others of becoming effective maintenance supervisors. (C. S. B.)

405 Wiedersum, Norman J.
GOOD MAINTENANCE BY DESIGN
American School and University
737 3rd St.
New York, New York. May 1966, 2 pp.

Discusses architectural planning of a new building as related to interpretation of specific educational requirements and summarizes highlights of what is being done today to indicate the responsibility of architects and administrators toward helping reduce the high cost of maintenance. Topics summarized include (1) the use of only two basic exterior materials--durable and economical load-bearing brick and all vertical walls and poured concrete lintels for all horizontal spans; (2) use of new roofing techniques; (3) new flooring materials that have the durability of terrazzo, but are less expensive; (4) acoustical tile hung ceilings; and (5) development of a new resin-based coating that can be applied to either aluminum or steel type windows. (H. E. J.)

406 THE WRIGHTMAN ELEMENTARY SCHOOL
The Research Council of the Great Cities Program
for School Improvement
5400 North St. Louis Avenue
Chicago, Illinois 60625. 1967, 48 pp.

The results of a study conducted by the Pittsburgh Public Schools and the Department of Architecture at Carnegie Institute of Technology to consider schools which are becoming educationally obsolete. Should these schools be drastically modernized or should they be torn down? Five things had to be considered in seeking the answers in the case of the Wrightman School: (1) site, (2) educational specification, (3) school district policy, and (4) the existing facility. The suggested solutions and layouts of ten architectural students are presented. (P. J. O.)

407 Zimmerman, Willima J.
RELATIONSHIP OF INITIAL COST AND MAINTENANCE COST IN
ELEMENTARY SCHOOL BUILDINGS
School Planning Laboratory Research, Stanford University
Stanford, California. July 1960, 13 pp.

Reports on the statistical analysis of the following: (1) to determine the relationship of initial costs of school construction to future maintenance costs; (2) to analyze the effects of variables significantly related to initial costs and/or maintenance cost. In summary, the relationship between construction costs and maintenance costs was analyzed statistically. Although the relationship was firmly established, the correlation of -.46 may indicate that measurements were affected by uncontrolled variables. Results indicate that a relationship, greater than can be accounted for by mere chance, does exist between initial costs and maintenance cost. Charts and graphs are presented. (H. H. C.)

Index

Acoustics, in classrooms, 17, 58, 283, 316, 327, 342, 386
  of special types, 92, 106,308, 325, 363, 366
  discussion of, 29, 178, 197, 202, 214, 224, 232, 260, 283, 288, 305, 316, 327, 342, 386
  in modernization, 396, 398
  in plant planning, 42, 74, 80, 204, 212, 283
Adaptability (See Flexibility)
Administration, 39, 44, 73, 108, 154
  business, 112
  offices for, 300, 368
Air Conditioning, control system, 278
  in classrooms, 171, 198, 245, 302, 303, 332, 342, 373
  cost of, 162, 171, 174, 246, 263, 302, 332
  in modernization, 238, 264, 394, 396, 398
  planning for, 2, 42, 57, 74, 83, 103, 130, 178, 179, 190, 282
  specific methods of, 188, 195, 212, 244, 263, 275, 281, 283, 302, 303, 373
  studies on, 176, 190, 237, 247, 279
Appraisal (See Surveys)
Architect, 114, 117, 119, 121, 122, 132
Art instruction, 306
Audiovisual Facilities, costs, 209
  educational telelvision, 1, 11, 28, 220, 236
    equipment, 30, 201
  planning for, 26, 103, 189, 197, 198, 212, 295, 310, 336
  reports on, 316, 325
Auditoriums, modernization of, 380, 383
  planning, 83, 232, 308, 386
  utilization of, 198, 221, 294, 370

Bibliographies, 62, 88, 97, 222, 298, 306, 317
Biology (See Science)
Bonds (See Finance)
Business, bidding, 120, 124
  contracts, 127
  procedures, 56, 163
Business education, 354

Cafeterias, planning, 253, 276, 360
  economies, 221, 286
  equipment, 277, 367
  reports on, 112, 218, 370
Carpeting, acoustical value of, 17, 202, 214 224, 232
  advantages of, 158, 202, 204, 205, 224
  planning for, 158, 178, 181, 268
  reports on use of, 52, 184, 210, 316, 332, 349, 362
Carrels, 5, 106, 307, 310, 315, 332, 366
Chemistry (See Science)
Classification, building areas, 14, 69
College facilities, economies, 116, 242
  innovations, 200, 372
  planning for, 16, 25, 62, 64, 72, 75, 77, 78, 92, 100, 106, 115, 135, 200, 225, 228, 240, 286, 238
  for special purposes, 26, 92, 106, 113, 172, 253, 286, 311, 312, 313, 354, 366, 369
Combination schools, 55, 87, 99
Conferences, building needs, 89
Construction costs, 6, 24, 35, 38, 43, 52, 95, 138, 146, 150, 153, 155, 170, 172, 193, 245, 239, 302
  materials, 24, 76, 172, 231, 233, 239, 254, 255, 258, 303, 314, 335
  safety in, 153, 234
  for special purposes schools, 113, 290, 345, 359
  systems approach, 63, 120, 192, 193, 221, 302
  for maintenance, 167, 405, 407
Contracts, 71, 121, 124, 127, 131
Consultants, 50, 51
Corridors (See Design)
Cost, of building index, 169
  comparative, 157, 159, 166, 171, 172, 221, 225
  of facilities, 6, 31, 35, 43, 52, 66, 95, 138, 142, 155, 165, 170, 302, 328, 330
  initial, 150
  of site, 287
  vs. size, 100

Design, approach to, 7, 13, 38, 58, 78, 103, 119, 125, 178, 187, 194, 217, 225, 228, 248, 297, 314, 346, 372, 375, 393
  corridors,171, 216, 221, 225, 229, 294, 375
  cost, 38, 150, 159, 166, 380
  for economy, 11, 23, 91, 171, 221, 302
  for flexibility, 21, 22, 29, 52, 104, 109, 185, 208, 303, 304, 305, 307, 316, 327, 328, 375, 400
  for maintenance, 405
  for modernization, 383, 386, 393, 400
  special purposes spaces, 26, 212, 290, 292, 299, 303, 305, 307, 310, 328, 334, 361, 368, 376

Economy, in construction, 71, 95, 146, 154, 170
  in design (See Design)
  in material selection, 170, 193
  principle of planning, 11, 18, 23, 24, 48, 71, 116, 154
Elementary school facilities, classrooms, 120, 171, 301, 303, 314, 329, 330, 349, 362, 375
  planning for, 2, 33, 60, 66, 79, 104, 120, 318, 334, 393
  special purposes spaces, multipurpose, 341
    playground, 309
    science, 318, 364, 365
Enrollment projection, 27, 31, 32, 33, 34, 35, 37, 61, 67, 81, 94, 105, 111, 240
Equipment, athletic lockers, 180
  bid specifications for, 3
  food service, 253, 276, 277, 367
  language laboratory, 295
  music, 308
  needed, 84, 103
  office, 348
  science, 292, 317
  shop, 340
  television, 30, 201
  vocational, 298,337
Evaluation, (See Surveys)

Finance, 151, 156, 160
  bids and bonds, 128, 129, 131, 136, 144, 160, 173
  costs, 138, 142, 146, 148, 152, 155, 157, 159, 165, 166, 169, 170, 171, 172, 174, 286
    of maintenance, 167
    of operation, 149, 152, 162
  insurance, 132, 137, 139, 175, 147, 161, 168
  management, 140
  planning, 135, 140, 146, 149, 150, 151, 153, 154, 156, 158, 160, 163, 175
  property accounting, 143, 164
  school building authority, 126, 141, 163
Flexibility, 5, 208, 386, 400
  economy, 91, 302
  examples of, 21, 29, 65, 109, 118, 185, 186, 198, 229, 303, 304, 305, 327, 349
Floors, cost of 204
  maintenance of, 203, 377, 399
  materials, 203
  sloped, 332
  wood, 235
  (See also Carpeting)
Food services, administration of, 39
  current trends in, 218, 252, 286, 360
  equipment, 253, 276, 277, 367
  modernization of, 276, 382
  unit kitchens, 360
Furniture, 83, 118, 199

Garages, 270
Grounds (See Sites)

Health and Physical Education, 54, 101, 241 309 331, 343, 355, 361,

Insurance, 132, 168
  construction safety, 153
  fire, 137
  packaged, 139, 145, 147, 161

Laboratories, language, 295, 312
  science, 322, 351, 376
    design, 376
    comparative costs, 172

Landscaping (See Sites)
Legal procedures, 44, 46, 126, 134
Libraries, junior college, 366
  planning for 5, 26, 291, 315
  trends in, 26, 112, 307, 310, 334, 344, 347
Lighting, with air conditioning, 162
  code, 111, 130
  costs, 207, 227
  maintenance, 402
  materials, 206, 207, 256
  measure of, 177, 206, 207
  modernization, 42, 74, 179, 222, 248, 398
  for special purposes, physics, 351
  television, 201, 212
Lockers (See Storage)
Lunchroom (See Cafeteria) (See also Food Services)

Maintenance, 24, 103, 142, 149, 167, 377, 379, 381, 390, 404, 407
  of buses, 403
  costs, 190, 405, 407
  of floors, 203, 205, 399
  of lighting, 402
  materials, 256, 257, 379, 405
  of mechanical equipment, 388, 390
  planning for, 388, 402
  preventive, 154, 257, 381, 390
  of roofs and walls, 378
  of site, 182
  unit standardization for, 176
Materials (See Construction) (See also Maintenance) (See also Modernization)
Mathematical Sciences, 292, 324
Mechanical Systems, 188, 195, 222, 245, 275, 281
Modernization, determination of need for, 4, 41, 110, 111, 392, 394, 397, 406
  of facilities, 31, 238, 264, 380, 383, 384, 385, 389, 391, 393, 395, 396, 400, 401
  of food services, 276, 382
  materials for, 387, 398
Movable school buildings, comparative costs, 148
  for flexibility, 65
  survey of, 10, 34
Multipurpose facilities, 5, 18, 23, 24, 221, 302, 303, 304, 341, 346
  auditoriums, 198, 221, 380
  science room, 322
  space dividers, 118, 185, 258, 305
  units, 341
Music, 308, 363

Obsolescence (See Flexibility) (See also Modernization)
Office, faculty, 299

Planning, 5, 8, 9, 10, 11, 18, 19, 22, 24, 32, 33, 34, 37, 42, 43, 45, 46, 47, 48, 49, 56, 57, 62, 63, 64, 67, 70, 71, 74, 77, 80, 82, 83, 96, 103, 111, 189, 212, 284, 297
  for art instruction, 306
  bibliography, 88, 97
  cooperative 18, 19, 20, 43, 46, 75, 86, 93, 114, 117
  guides, 18, 26, 42, 46, 47, 56, 67, 76, 79, 80, 85, 102, 103, 179
  nursery school, 293
  and quality, 9, 40, 63
  standards, construction, 234
    materials, 3, 231
    office, 299, 348
Preplanning, 12, 46, 56, 70, 84, 85, 119, 134
  need for, 109
  principles of, 4, 13, 38
Psychological effects, of acoustical environment, 260
  of carpeting, 17
  of color, 223, 262
  of glass walls, 217
  of grade grouping, 73
  of school plant, 36
  of thermal environment, 190, 246, 264, 279
  of windowless classrooms, 59, 226

Rehabilitation (See Modernization)
Relocatable Facilities (See Movalbe Facilities)
Repairs (See Maintenance)

Safety, fire protection program, 211, 215, 219, 243, 266, 269, 320
  materials, 231, 239, 385
  in modernization, 385
  planning for, 42, 74, 103, 219, 234
  in shops, 296
  traffic, 280
  vadalism, 206, 274
Science, 26, 75, 317, 318, 319, 320, 321, 322, 323, 333, 345, 351, 358, 364, 365
Secondary Schools, 40, 69, 84, 86, 114, 296, 310, 317, 324, 334, 337, 343, 350, 351, 357, 358, 359, 374
  classrooms, 302, 305, 324, 327, 328, 350, 354, 359
  studies on, 8, 35, 40, 61, 69, 73, 83, 86, 98, 100, 109, 150, 159, 229, 294, 316, 342, 343, 346, 370, 386
Service facilities, 284
  drainage and sewage, 259
  laws pertaining to, 133
  planning, 128, 284
Sites, acquisition of, 31, 132, 271
  costs, 287
  landscaping, 191
    ventilation, in relation to, 285
  problems, 83, 406
  selection of, 12, 16, 42, 53, 54, 64, 71, 74, 76, 81, 94, 182, 183, 196, 249, 251, 267, 271, 273
    for maintenance, 182
  utilization, 12, 54, 55, 87, 99, 261, 272, 294, 297, 301, 302
Size, 60
  in relation to quality, 40
Special Education, 290, 356
  blind children, 352
  retarded children, 371
  speech and hearing, 325, 335, 339
Specifications, bids, 3, 117
  educational, 18, 19, 20, 23, 27, 38, 41, 43, 45, 48, 49, 56, 66, 72, 82, 83, 84, 85, 86, 90, 93, 96, 102, 107, 112, 114, 117, 118, 245
  for modernization, 171, 391, 406
  mechanical, 123
  in special areas, handicapped, 290
    health, physical education and recreation, 241, 355
    music, 308
    science, 351, 358
    special education, 356
    vocational - agriculture, 108, 337
    vocational - industrial, 108, 357
Standards, heating and ventilating, 282
  materials, 3, 76, 231, 233, 379
  mechanical, 123, 130
  plumbing fixtures, 230
  structure and building safety, 68, 80, 111, 130, 234, 377
State services, 51, 68, 80, 95, 134
Storage space, 180, 212, 296, 303, 349, 386
Surveys, 10, 14, 15, 18, 27, 34, 41, 43, 46, 50, 51, 66, 67, 68, 78, 85, 94, 102, 103, 105, 240, 245, 392, 395
Team teaching, facilities for, 11, 52, 96, 186, 302, 304, 307, 315, 346, 349, 362, 370
Television, education, 1, 28, 30, 109, 189, 201, 209, 220, 236, 265, 289, 336
    (See also Audiovisual)

Vandalism, 274
Ventilation (See Air Conditioning)
Vocational education, 75, 108, 115, 251, 296, 298, 337, 340, 357, 359, 373, 374

Walls, air, 349, 362, 398
  folding, 311
  glass, 208, 217
  maintenance, 378
  movable, 91, 118, 185, 326
  non load bearing, 208
  screens, 187
Windows, design, 59, 178, 226, 254, 255, 257
  replacement, 256, 257
  selection, 213